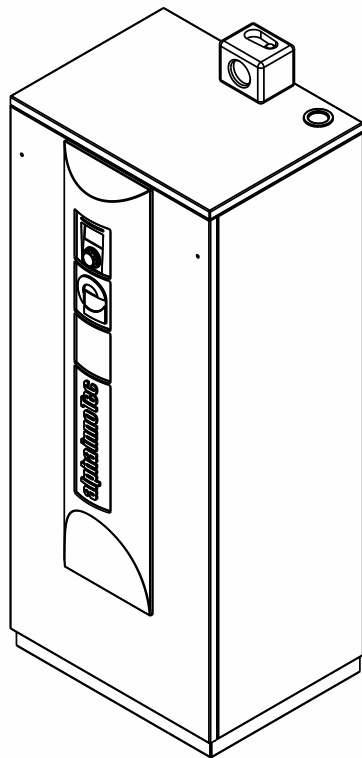
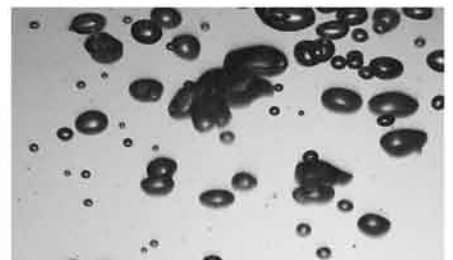
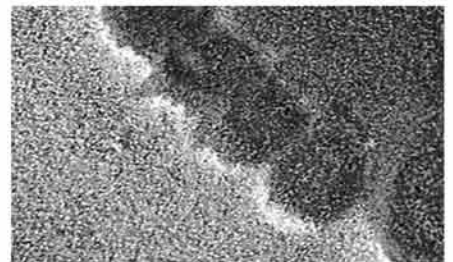


WATER/WATER COMPACT

Heat pumps



WWC H/X series
WWC X series





Please read first

This operating manual provides important information on handling the unit. It is an integral part of the product and must be stored so that it is accessible in the immediate vicinity of the unit. It must remain available throughout the unit's entire service life. It must be handed over to subsequent owners or users of the unit.

Read the operating manual before starting any work on or with the unit. Especially the chapter on safety. Follow all instructions in full and unreservedly.

It is possible that this operating manual may contain instructions that seem incomprehensible or unclear. In the event of any questions or if any details are unclear, contact the factory customer service department or the manufacturer's local partner.

Since this operating manual was written for several different models of the unit, always comply with the parameters for the respective model.

This operating manual is intended only for persons assigned to work on or with the unit. Treat all constituent parts confidentially. They are protected by copyright. They may not be reproduced, transmitted, copied, stored in electronic systems or translated into another language, either wholly or in part, without the express written permission of the manufacturer.

Symbols

The following symbols are used in the operating manual. They have the following meaning:



Information for users.



Information or instructions for qualified personnel.



DANGER!

Indicates imminent danger, which results in severe injuries or death.



WARNING!

Indicates a potentially dangerous situation, which could result in severe injuries or death.



CAUTION!

Indicates a potentially dangerous situation that could result in moderate or slight injuries.



IMPORTANT

Indicates a potentially dangerous situation, which could result in property damage.



NOTE.

Emphasized information.



ENERGY SAVING TIP

Indicates advice, which helps to save energy, raw materials and costs.



Reference to other sections of the operating manual.



Reference to other documents of the manufacturer.



Contents



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Intended use

The unit is only to be used for its intended purpose. This means:

- for heating.
- for domestic water heating.

The unit may be operated only within its technical parameters.



Overview "Technical data / scope of delivery".



NOTE.

Notify the responsible power supply company of the use of a heat pump or heat pump system.

Disclaimer

The manufacturer is not liable for any damage or losses resulting from use of the unit which is not its intended use.

The manufacturer's liability also expires:

- if work is carried out on the unit and its components contrary to the instructions in this operating manual.
- if work is improperly carried out on the unit and its components.
- if work is carried out on the unit which is not described in this operating manual, and this work has not been explicitly approved by the manufacturer in writing.
- if the unit or components in the unit have been altered, modified or removed without the explicit written consent of the manufacturer.

EC conformity

The unit bears the CE marking.



EC Declaration of Conformity

Safety

The unit is safe to operate for its intended use. The construction and design of the unit conform to current state of the art standards, all relevant DIN/VDE regulations and all relevant safety regulations.

Every person who carries out work on the unit must have read and understood the operating manual before starting any work. This also applies if the person concerned has already worked with such a unit or a similar unit or has been trained by the manufacturer.

Every person who carries out work on the unit must comply with the relevant local accident prevention and safety regulations. This especially applies to the wearing of personal protective clothing.



DANGER!

Risk of fatal electric shock!

All electrical connection work must be carried out by qualified electricians only. Before opening the unit, safely disconnect the system from the power supply and prevent it from being switched back on!



WARNING!

Only qualified personnel (trained heating, refrigerating system and refrigerant engineers and electricians) may carry out work on the unit and its components.



WARNING!

Note and follow safety stickers on and in the unit.



WARNING!

Unit contains refrigerant! Leaking refrigerant could result in personal injury and environmental damage. Therefore:

- Switch off system.
- Thoroughly ventilate installation room.
- Notify the manufacturer's authorised service centre.



IMPORTANT

For safety reasons:

Never disconnect the unit from the power supply, unless the unit is being opened.



IMPORTANT

Only install the heat pump indoors.



Dimensioned drawing and installation plan for the respective unit model.

Customer service

For technical information please contact your local heating engineer or the manufacturer's local partner.



“Customer service” overview.

Warranty/Guarantee

For warranty and guarantee provisions, please refer to your purchase documents.



NOTE.

Please contact your dealer about all matters concerning warranties and guarantees.

Disposal

When withdrawing the old unit from service, always comply with the relevant local laws, guidelines, directives and standards concerning the recovery, recycling and disposal of the operating materials and components of refrigerating units.



“Dismantling”.

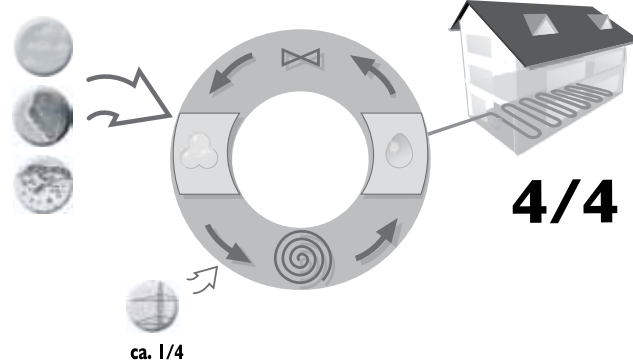
Operating principle of heat pumps

Heat pumps operate on the same principle as a refrigerator: same technology, only with reversed benefits. The refrigerator extracts heat from foods, which is released into the room through fins on the back.

The heat pump extracts heat from our environment: air, earth or ground water. The extracted heat is conditioned in the unit and supplied to the heating water. Even when it is extremely cold outside, the heat pump draws enough heat to heat a house.

Example: drawing of a brine/water heat pump with floor heating:

ca. 3/4



$\frac{4}{4}$ = usable energy
approx. $\frac{3}{4}$ = environmental energy
approx. $\frac{1}{4}$ = external electrical energy



Area of use and heat source requirements

Taking into consideration the ambient conditions, limits of use and the relevant regulations, every heat pump can be used in new or existing heating systems.



“Technical data/scope of delivery” overview,

WATER TEMPERATURE / WATER QUANTITY

The water in the extraction well of the heat source system must have a minimum temperature of 7 °C all year round and may not exceed a temperature of 25°C. Depending on the heat output required or its cooling capacity as a relevant variable for dimensioning the heat source, a minimum water rate is required, which must be provided by the heat source as a continuous output. Before installing the water/water heat pump, a pump test should/must be carried out for at least 12 hours with verification of a quasi-constantly lowered water table (persistence) in order to provide information about the quantity of water available. For efficient operation of the well, during the initial start-up the nominal flow rate must be adjusted on the heat source side. Any appropriate components, which enable balancing are to be installed in the pipe network here. The material of the components used must be chosen according to the water quality. The necessary flow rate (heat source water rate) must meet the heat pump's requirements.



“Technical data/scope of supply” overview.

WATER QUALITY

In Germany the well must be designed and built to DIN 4021 and VDI 4640 (in other countries according to the corresponding regulations). Wells may only be drilled and built by drilling companies with a permit in accordance with DVGW W120. The water quality of the heat source is defined as normal groundwater. Ensure that the suction and return pipe always extends below the water level by sufficient depth, to ensure that oxygen is not added to the water (risk of iron oxide deposits). Please discuss the problem of iron oxide deposits with your well builder. During the planning the quality of the groundwater should be checked in advance as well as possible (e.g. by asking the competent water authority or searching for data on existing adjacent wells) and subsequently verified by water analysis in the built production well. The following table helps to assess the water quality.



IMPORTANT

A water analysis and pump test must be carried out before installing the water/water heat pump.



NOTE:

Water analyses are prepared by water test laboratories. Initial information about possible use of groundwater is available from your local water management authority. A pump test provides information as to whether a sufficient quantity / rate of water is available to cover the requirements for the heating output of your unit. The minimum groundwater flow rate must at least be available as a continuous output.



“Technical data/scope of supply” overview, “Heat source flow rate” section.

EVALUATION OF THE WATER ANALYSIS

Water constituents - minimum requirement. The water should be analysed in advance for the test values listed below (table). An important criterion to be used for taking water samples is the DVGW Standard, Technical Notices, Leaflet W 112 and use of the technical rules listed in it (DIN, EN and ISO standards).

| Designation | Limit |
|-----------------------------|---|
| pH value | > 6.8 |
| Iron level | < 0.2 mg / l |
| Manganese level | < 0.1 mg / l |
| Chloride level | < 300 mg / l |
| Free chlorine level | < 3 mg / l |
| Turbidity | none |
| Technical freedom from sand | < 0.1 mg / l sand per 10 l pumped water |



IMPORTANT

If a value does not conform to the value listed in the table, a water/water heat pump may not be used. Direct operation of the unit in conjunction with surface water, wastewater, industrial wastewater or mixtures of water and alkali solutions, acids or chlorine is also not allowed.



Heat metering

In addition to proof of the system's efficiency, the EEWaermeG (German law on renewable energy heat) also requires heat metering (referred to in the following as WME). The WME is mandatory for air/water heat pumps. For brine/ water and water/water heat pumps, a WME must be installed for flow temperatures $\geq 35^{\circ}\text{C}$. The WME must record the total thermal energy output (heating and domestic hot water) in the building. In the case of heat pumps with heat metering the analysis is carried out via the controller. This displays the thermal energy output into the heating system in kWh.



NOTE.

Unit variants with or without heat metering are available.

Operation

ENERGY SAVING USE OF THE HEAT PUMP HEATING

By deciding to purchase a heat pump or a heat pump system you are making a long-term contribution to protecting the environment through low emissions and reduced primary energy use.

You can operate and control the heat pump system with the control panel of the heating and heat pump controller.



NOTE.

Make sure that the control settings are correct.



Operating manual of the heating and heat pump controller.

To ensure that your heat pump or heat pump system operates efficiently and in an environmentally friendly way in heating mode, please pay particular attention to the following:



ENERGY SAVING TIP

Avoid unnecessarily high flow temperatures. The lower the flow temperature on the heating water side the more efficient the system.



ENERGY SAVING TIP

Preferably use purge ventilation. Compared to continuously open windows, this form of ventilation (fully opening windows for a short period, two to three times a day) reduces energy consumption and your heating bill.

Care of the unit

You can clean the outer surfaces of the unit with a damp cloth and proprietary household cleaning products.

Do not use cleaning or care products that contain abrasives, acids and/or chlorine. Such products would irreparably damage the surfaces and could also cause technical damage to the unit.

Maintenance of the unit

The refrigerating circuit of the heat pump does not require any regular maintenance.

According to EU Regulation (EC) 842/2006 of 17.05.2006, it is necessary to carry out leak inspections and to keep a log book for certain heat pumps!

The criteria for whether or not it is necessary to perform a leak test and keep a log book are the hermetic impermeability of the refrigerating circuit and the refrigerant capacity of the heat pump! A log book is not required for heat pumps with a refrigerant capacity of $< 3\text{kg}$. For all other heat pumps, the log book is supplied with them.



Log book for heat pumps, "Information on using the log book" section.

The components of the heating circuit and the heat source (valves, expansion vessels, circulation pumps, filters, dirt traps) should be tested and cleaned as needed, however, at least annually, by qualified personnel (heating or refrigerating system fitters).

It is best to arrange a maintenance agreement with a heating installation company. The company will arrange the necessary regular maintenance work.

CLEANING AND FLUSHING UNIT COMPONENTS



CAUTION!

Unit components may be cleaned and flushed only by customer service personnel authorised by the manufacturer. Use only liquids recommended by the manufacturer.

After flushing the condenser with chemical cleaning agent, any residues must be neutralised and the system intensively flushed with water. Always note and follow the technical data of the respective heat exchanger manufacturer.



Malfunctions

In the event of a malfunction, you can detect the cause of the malfunction via the diagnostics program of the heating and heat pump controller.



Operating manual of the heating and heat pump controller.



WARNING!

Only customer service personnel authorised by the manufacturer may carry out service and repair work on the components of the unit.



“Customer service” overview.

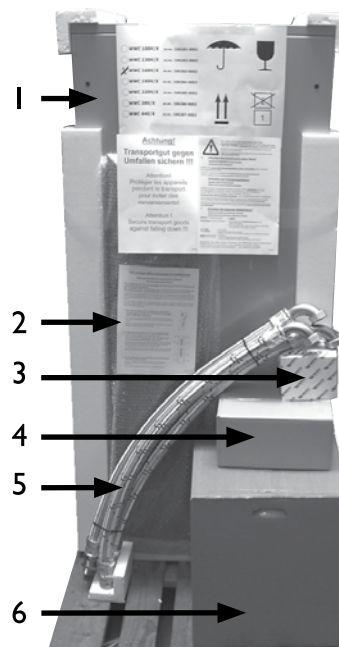
Note that no fault is displayed if the safety temperature limiter on the electric heating element has triggered (depending on model).



“Commissioning”, “Safety temperature limiter” section.

Scope of delivery

Example layout of the scope of delivery:



- 1 Compact unit with hermetic compressor, all safety-relevant components for refrigeration circuit monitoring, installed sensors for recording the hot gas, heating water flow and return temperature, sensors for monitoring the heat source temperature, flow monitors for monitoring the water flow rate
- 2 Screen
- 3 Safety assembly for the heating circuit
- 4 Separate package (size 1: one box; size 2: two boxes) with control panel, external temperature sensor, dirt trap, Sylomer strips, seals
- 5 Vibration isolators for the heating circuit and for the heat source
- 6 Expansion vessel for the heating circuit with cap valve



IMPORTANT

In conjunction with a multi-functional and/or buffer tank with volume > 200l, always install an additional, adequately-dimensioned expansion vessel.



Complete the following first:

- ① Check the delivery for outwardly visible signs of damage...
- ② Check to make sure that the delivery is complete... Any defects or incorrect deliveries must be reported immediately.



NOTE.

Note the unit model.



“Technical data/scope of delivery” overview.

FUNCTIONALLY NECESSARY ACCESSORIES



IMPORTANT

Only use the manufacturer's original accessories.

If the unit is to be used for heating water, a 3-way switching valve must be installed. This is not included with the unit and must be ordered separately.

Installation

The following applies to all work to be done:



NOTE.

Always comply with the relevant local accident prevention regulations, statutory regulations, guidelines and directives.



NOTE.

Note the sound information for the respective model.



“Technical data/Scope of delivery” overview, “Sound” section.

INSTALLATION ROOM



IMPORTANT

Install the heat pump inside buildings only.

The installation room must be frost-free and dry. It must meet the requirements of EN 378. It must also fulfil relevant local regulations.



Dimensioned drawing and installation plan for the respective unit model.

TRANSPORT TO INSTALLATION LOCATION

Always comply with the following safety information during transport:



WARNING!

Several people are required to transport the unit. Take into account the weight of the unit.



“Technical data/Scope of delivery” overview, “General unit data” section,



CAUTION!

Wear safety gloves.

**WARNING!**

The unit can tilt and tip over when being removed from the wooden pallet and during transport. This can result in personal injury and damage to the unit.

- Take suitable precautions to prevent the risk of tipping over.

**IMPORTANT**

Never use components and hydraulic connections on the unit for transport purposes.

**IMPORTANT**

Do not damage the hydraulic connections under any circumstances.

**IMPORTANT**

Do not tilt the unit more than a maximum of 45° (in any direction).

To prevent transport damage, you should transport the unit to its final place of installation in its packed condition (on the wooden pallet with packaging) using a pallet truck.

If it is not possible to transport the unit to the final installation location using a pallet truck, you can also transport the heat pump on a handcart.

Before transporting with a handcart, we recommend removing the front panel in order to reduce the weight of the unit.

- ① Remove packaging and set extra box aside (will be needed later on!)...

- ② Remove angle bracket, transport and packaging material from the unit...

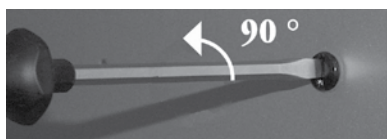
Dispose of angle bracket, transport and packaging material properly and in an ecologically compatible way...

Lift unit from the pallet...

- ③ Remove front panel of unit...

③.①

To do so, loosen the quick-release screws. Turn through 90° to the left...



③.②

Lift front panel and set aside in a safe place.



- ④ Push handcart under the rear side of the unit.

**IMPORTANT**

If the handcart is pushed under the unit at the rear panel, ensure you do not damage any connections during transport.

**IMPORTANT**

Transport with a handcart on the front side of the unit is not permitted.

**IMPORTANT**

Do not tilt the unit more than a maximum of 45° (in any direction).

INSTALLATION**CAUTION!**

Several people are required to install the unit.

**NOTE.**

Take into account the size of the unit.



“Technical data/Scope of delivery” overview, “General unit data” section.

**NOTE.**

Always refer to and follow the installation plan for the respective model. Note the size and minimum clearances.



Installation plan for the respective model.

Proceed as follows at the installation location:



- ① If you have not already done so, remove angle bracket, transport and packaging material from the unit. Set the extra box to the side and lift the unit from the wooden pallet...



“Transport to installation location”.



Dispose of angle bracket, transport and packaging material properly and in an ecologically compatible way...

- ② Set unit on a stable, solid and level, preferably sound-insulated surface. Ensure that the floor is designed for the weight of the heat pump...

Set up the unit so that the switchbox side (= operator side) is accessible at all times...



“Technical data/Scope of delivery” overview, “General unit data” section.

- ③ Use the Sylomer strips supplied to level out any minor unevenness.

The Sylomer strips give the heat pump additional stability. They absorb sound and vibrations transfer to the floor.

Place the Sylomer strips under the heat pump as follows:

③•①

Tilt the unit to one side, slowly and carefully...

Secure unit in raised tilted position so that it cannot accidentally tip back into the original position.



IMPORTANT

Do not tilt the unit more than a maximum of 45° (in any direction).

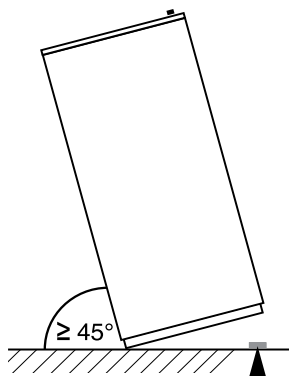


CAUTION!

Hands and fingers could be crushed during the following work!

③•②

Position a Sylomer strip under the unit, flush with the respective outer edge...



③•③

Slowly and carefully tilt the unit back into its initial position.

- ④ Repeat steps ③•① to ③•③ for the remaining sides of the unit.

Position Sylomer strips at right angles to each other, end-to-end:



Front side of unit (= operator side)



Installing the hydraulic connections



DANGER!

Risk of fatal electric shock!

Before opening the unit, disconnect the system from the power supply and prevent it from being switched back on!



NOTE.

All materials used in the heat source circuit (pipes, connections, sealing material...) must be corrosion resistant and suitable for the ground-water quality, e.g. suitable plastics or stainless steel.



IMPORTANT

Connect the unit to the heating circuit according to the hydraulic diagram for the respective model.



“Hydraulic connection” instructions.



IMPORTANT

The heat source system must be designed according to the specifications of the planning manual.



Planning manual and “Hydraulic connection” documents.



NOTE.

Check to make sure that the cross-section and lengths of the pipes for the heating circuit are adequately dimensioned. The free compression of the circulation pumps must be able to deliver at least the minimum throughput required for your model.



“Technical data/Scope of delivery” overview, “Heat source” and “Heating circuit” sections.



NOTE:

Check whether the cross-sections and lengths of the heat source pipes are adequately dimensioned.



NOTE:

The heat source pump must be designed as a constant speed pump. It must at least produce the minimum throughput required for your unit model. The heat source pump must be designed by performing a pipe network calculation.



“Technical data/Scope of delivery” overview, “Heat source” sections..



IMPORTANT

Please note that the designed heat source pump may only be used within its pump characteristic curve!



IMPORTANT

When installing the connections, always secure the connections on the unit against twisting, in order to prevent damage to the copper pipes inside the unit.



NOTE:

Install the dirt trap included in the scope of delivery in the well shaft (heat source inlet)

The connections for the heating circuit or the heat source are located at the rear of the unit:



For position of the connections, please refer to the dimensioned drawing for the respective model.



Install shut-off devices for the heating water outlet (flow) and heating water inlet (return) on the heat pump side...

Install shut-off devices for the heat source inlet and heat source outlet on the heat pump side...



NOTE.

By installing the shut-off devices, the evaporator and condenser of the heat pump can be flushed, if necessary.



CAUTION!

The condenser may only be flushed by customer service personnel authorised by the manufacturer.



- ② Thoroughly flush the heating circuit and heat source circuit before connecting to the unit...



NOTE.

Dirt and deposits in the heating circuit and heat source can cause malfunctions.

- ③ Connect the fixed pipes of the heating circuit with the corresponding connections at the rear of the unit. Use vibration isolators and elbow unions (size 2 only)...

Vibration isolators must be installed to prevent structurally borne sound transfer to the fixed piping.

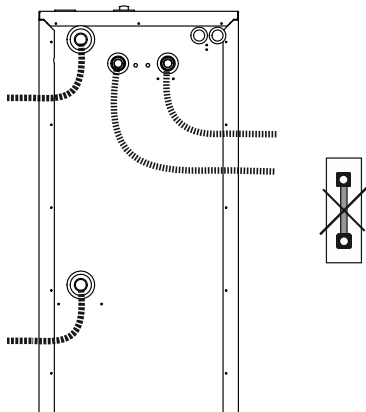
Vibration isolators for the heating circuit are included with the unit; they have a zined mesh and are marked in colour.

- ④ Connect the fixed piping of the heat source with the relevant connections at the rear of the unit. Use vibration isolators and elbow unions (size 2 only)...

Vibration isolators must be installed to prevent structurally borne sound transfer to the fixed piping.

Vibration isolators for the heat source are included with the unit and have a stainless steel mesh.

Lay vibration isolators in the quadrant, as shown by way of example in the following sketch:



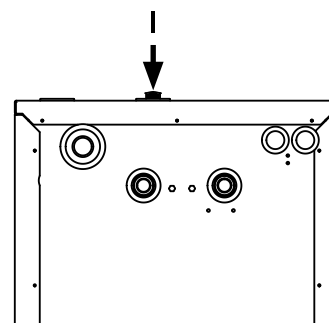
Straight or extended hose laying of the vibration isolators is not permitted.

SAFETY ASSEMBLY

You must install the safety assembly for the heating circuit. The safety assembly for the heating circuit is included in the extra box.

The discharge from the heating water safety valve must be drained according to the relevant standards and regulations. Discharging the safety valve discharge into the sewers is allowed only if fed via a funnel siphon, which must be accessible at all times.

The connection for the safety assembly is located on the outside at the top rear of the unit.



I Heating circuit safety assembly connection

EXPANSION VESSEL

The expansion vessel for the heating circuit and the corresponding cap valve are included in the scope of delivery. They must both be integrated in the heating circuit on site in compliance with the relevant standards, guidelines and directives.



IMPORTANT

In conjunction with a multi-functional and/or buffer tank with volume >200 l, always install an additional, adequately-dimensioned expansion vessel.



Electrical connection work

The following applies to all work to be done:



DANGER!

Risk of fatal electric shock!

All electrical connection work must be carried out by qualified electricians only.

Before opening the unit, safely disconnect the system from the power supply and prevent it from being switched back on!



WARNING!

During installation and when carrying out electrical work, comply with the relevant EN-, VDE and/or local safety regulations.

Comply with technical connection requirements of the responsible power supply company (if required by the latter)!



NOTE.

All live cables must be stripped before they are laid in the cable duct of the switchbox!

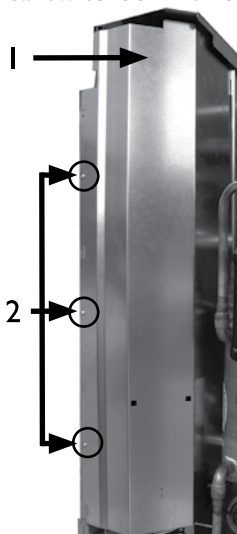
Proceed as follows:

① Open unit, if closed...



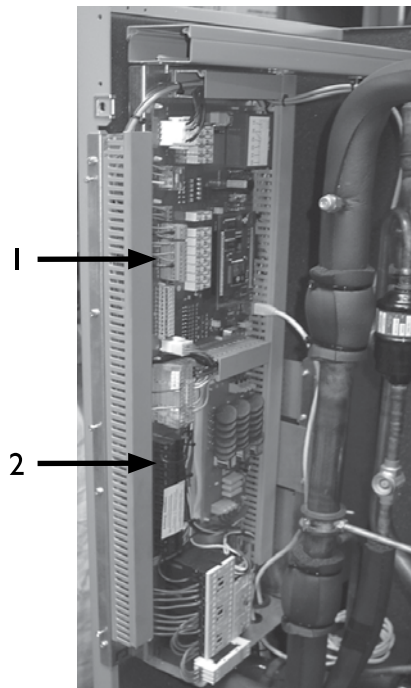
"Transport to the installation location", ② and ③.

② Open electrical switchbox inside the unit...



- 1 Cover plate of the switchbox
- 2 Screw plugs

Opened switch box size 1:



- 1 Controller board connections
- 2 Power and control cable connections


Opened switch box size 2:



- 1 Controller board connections
- 2 Power and control cable connections




- ③ Feed the load and control cables as well as the cables for sensors into the inside of the unit through the openings provided at the rear of the unit...

 For positioning of the rubber grommets for feeding through the cables, see “dimensioned drawing” for the respective model.

- ④ Lay load and control leads in the cable duct inside the unit all the way to the switchbox.

- ⑤ Install electrical connections according to the terminal diagram and the circuit diagrams.

 “Terminal diagrams” and “Circuit diagrams” for the respective model.

! IMPORTANT

Install electric connections only according to the terminal diagram and the circuit diagrams that apply to your model.

! IMPORTANT


Ensure clockwise rotary field of the load power supply (compressor).

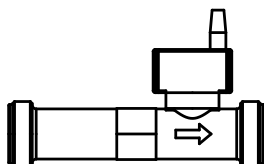
Operation with the incorrect rotary direction of the compressor can cause serious, irreparable damage to the compressor.

! IMPORTANT

Ensure the power supply of the heat pump is fitted with a 3-pole miniature circuit-breaker with at least 3mm contact gap.

Note the level of the tripping current.

 “Technical data/Scope of delivery” overview, “Electrics” section.



! IMPORTANT

The sensor cable for heat quantity recording may not be shortened!



NOTE.

The control panel of the heating and heat pump controller can be connected to a computer or network using a suitable network cable, enabling the heating and heat pump controller to be controlled remotely from there.

If this is required, install a shielded network cable (category 6, with RJ-45 connector) through the unit when installing the connections and run it through the front panel of the unit, parallel to the existing control cable of the heating and heat pump controller.

- ⑥ After completing all electrical installation work, close the switchbox inside the unit...

- ⑦ Screw on the front panel of the unit, if no further installation work inside the unit is to be carried out immediately.



Flushing and filling the system

! IMPORTANT

The system must be absolutely free from air before commissioning.

WATER QUALITY

OF THE FILL AND MAKE-UP WATER IN WATER HEATING SYSTEMS ACCORDING TO VDI 2035 PART I AND II

Use of modern, energy-efficient heat pump systems is becoming increasingly widespread. Their ingenious technology enables these systems to achieve very good efficiencies. The decreasing space available for heat generators has led to the development of compact units with increasingly smaller cross-sections and high capacities. This means that the complexity of the systems and the material diversity are also increasing, which plays an important role, especially in their corrosion behaviour. Alpha InnoTec ensures continuous technological advances, but all these technical refinements require the system to be operated with correctly filled heating water. The heating water not only affects the efficiency of the system, but also the life of the heat generator and the heating components of a system.

The guide values of VDI 2035 Part I and Part II must therefore be complied with as minimum requirements for proper operation of the systems. Our practical experience has shown that the safest, most reliable and fault-free running is achieved with so-called low-salt operation.

VDI 2035 Part I provides important information and recommendations regarding scaling and its prevention in heating and domestic hot water heating systems.

VDI 2035 Part II primarily deals with the requirements for reducing heating water corrosion in hot water heating systems.

PRINCIPLES OF PART I AND PART II

The occurrence of scaling and corrosion damage in hot water heating systems is low, if

- proper planning, design and commissioning is carried out
- the system is closed in corrosion terms
- adequately dimensioned pressurising is integrated
- the guide values for the heating water are complied with
- and regular servicing and maintenance are carried out.

A system log should be kept, in which the relevant planning & design data is entered (VDI 2035).

DAMAGE THAT CAN OCCUR IN CASE OF FAILURE TO COMPLY WITH THE ABOVE

- Malfunctions and the failure of components (e.g. pumps, valves)
- Internal and external leaks (e.g. from heat exchangers)
- Cross-section reduction and blockaging of components (e.g. heat exchanger, pipes, pumps)
- Material fatigue
- Gas bubbles and gas cushion formation (cavitation)
- Negative effect on heat transfer (formation of coatings, deposits) and associated noises (e.g. boiling noises, flow noises)

LIMESCALE – THE ENERGY KILLER

Filling with untreated drinking water inevitably leads to the precipitation of all calcium as scale. The consequence: limescale deposits form on the heat transfer surfaces of the heating. The efficiency falls and the energy costs rise. A rule of thumb is that 1 millimetre of limescale deposit causes an efficiency loss of 10%. In extreme cases it can even cause damage to the heat exchangers.

WATER SOFTENING TO VDI 2035 – PART I

If the water is softened in accordance with the VDI 2035 guidelines before it is used to fill the heating system, no scale can form. This effectively and permanently prevents limescale deposits and the resulting negative effects on the entire heating system.

CORROSION – AN UNDERESTIMATED PROBLEM

VDI 2035, Part II, deals with the problem of corrosion. Softening the heating water can prove to be insufficient. The pH value can significantly exceed the limit of 10. pH values higher than 11 can set in, which even damage rubber seals. The VDI 2035, Part I guidelines are fulfilled; however, VDI 2035, Part 2 suggests a pH value between 8.2 and maximum 10.

If aluminium materials are used, which is the case in many modern heating systems, a pH value of 8.5 must not be exceeded! Because otherwise there is a threat of corrosion – aluminium is attacked without the presence of oxygen. Therefore, apart from softening the heating fill and make-up water, the heating water should also be



appropriately conditioned. This is the only way to comply with the VDI 2035 requirements and the recommendations and installation instructions of the heat pump manufacturer.

Part 2 of VDI 2035 also refers to the reduction in total salt content (conductivity). The risk of corrosion is far lower if deionised water is used than is the case if the system is operated with salty, i.e. softened water.

Even if the water has been softened beforehand, it contains dissolved, corrosive salts, which act as electrolytes due to the use of different materials in the heating system and therefore accelerate corrosion processes. This can ultimately result in pitting.

ON THE SAFE SIDE WITH LOW-SALT OPERATION

The problems listed above do not occur at all with low-salt operation, as the heating water contains neither corrosive

salts such as sulphates, chlorides and nitrates nor alkalis-ing sodium hydrogen carbonate. The corrosive properties of deionised water are very low and in addition, scale cannot form in the boiler. This is the ideal approach for closed heating circuits, in particular, because low oxygen input into the heating circuit can also be tolerated.

In general, when the system is filled with deionised water, the pH value sets itself within the ideal range due to "self-alkalinisation". If necessary, a pH value of 8.2 can be very easily alkalis-ed by adding chemicals. In this way, optimum protection of the entire heating system is achieved.

MONITORING

Analytical recording and monitoring of the relevant water values and the added active conditioning substances is of decisive importance. Therefore, they should be monitored regularly using appropriate water test equipment.

FLUSH AND FILL THE HEATING CIRCUIT AND DOMESTIC HOT WATER TANK

Proceed as follows:

- ① Place a bleeder (vent) at the highest point of the heating circuit in the heating water outlet (flow)...
- ② If necessary, place a bleeder at the highest point of the heating circuit in the heating water inlet (return)...

- ③ Open unit, if closed...



"Transport to the installation location", ② and ③.



DANGER!

Risk of fatal electric shock!

The electrical switchbox inside the unit must be closed with its cover!

- ④ Flush and fill the unit via the filling and draining tap...



IMPORTANT

Do not exceed a pressure of 2.5 bar when flushing the unit. The drain line of the heating circuit safety valve must be closed before flushing and filling.



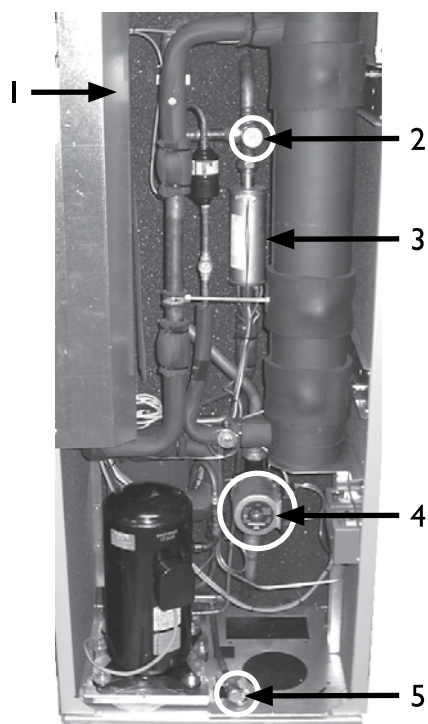
NOTE:

Flush heat pump and heating circuit for about 5 minutes.



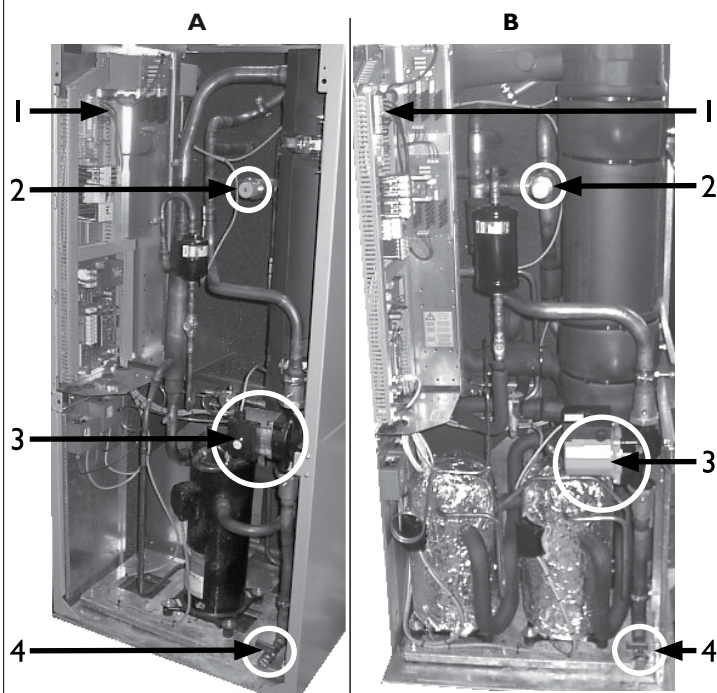
Bleeding

VIEW OF INSIDE OF UNIT, SIZE 1



- 1 Electrical switchbox
- 2 Overflow valve
- 3 Electric heating element
- 4 Circulation pump, heating circuit
- 5 Fill and drain tap, heating circuit

VIEW OF INSIDE OF UNIT, SIZE 2



A 28kW unit

B 44kW unit

- 1 Electrical switchbox
- 2 Overflow valve
- 3 Circulation pump, heating circuit
- 4 Fill and drain tap, heating circuit

BLEEDING THE UNIT

The unit is bled automatically if the bleeder (vent valve) of the safety assembly is open. If the heating circuit is filled or drained, the venting valve of the safety assembly opens.

BLEEDING THE CIRCULATION PUMP OF THE HEATING CIRCUIT

Unscrew the screw cover in the middle of the circulation pump until loose and close again after venting.



BLEEDING THE DOMESTIC HOT WATER TANK

To bleed the domestic hot water tank, the domestic hot water charge circuit must be flushed separately.

To do this, manually switch the domestic hot water changeover valve to domestic hot water charging. After bleeding, return it to the initial position.

! IMPORTANT

Do not exceed a pressure of 2.5 bar when flushing the unit.



NOTE:

Once the heat pump, heating circuit and domestic hot water charging circuit have been flushed, the bleeding program of the heating and heat pump controller must be started, after the control panel has been installed.

- ⑤ If no further steps follow, install the front panel.

Insulating the hydraulic connections



NOTE.

Insulate the heating circuit and the heat source according to relevant local standards and guidelines.

- ① Check all hydraulic connections for leaks. Perform leak test...
- ② Insulate all connections, vibration isolators, connections and pipes of the heating circuit and the heat source. Insulate the heat source so that it is **vapour-diffusion tight**.

Overflow valve

TESTING AND SETTING THE OVERFLOW VALVE



NOTE.

Always complete the following steps within a relatively short time. The heat pump switches to high-pressure fault if the maximum return temperature is exceeded.

- ① Make sure that the system is running in heating mode (ideally in cold condition)...
With the heating curve set low, switch the system to "Forced heating"...



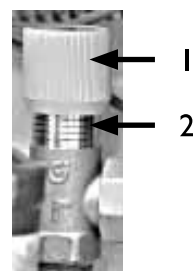
Operating manual of the heating and heat pump controller.

- ② Shut off valves to the heating circuit...
- ③ Make sure that the flow rate is passed 100% through the overflow valve...
- ④ Read out the forward and return temperatures in the heating and heat pump controller...



Operating manual of the heating and heat pump controller.

- ⑤ Turn the adjusting knob of the overflow valve until the temperature difference (= spread) between the forward and return flow is between 5 and 9 K...



- 1 Adjusting knob
- 2 Overflow valve



NOTE.

Turning the adjusting knob:
– clockwise = increases spread.
– anticlockwise = decreases spread.

- ⑥ Open valves to heating circuit.
- ⑦ Reset the heating and heat pump controller.



Installing the control panel

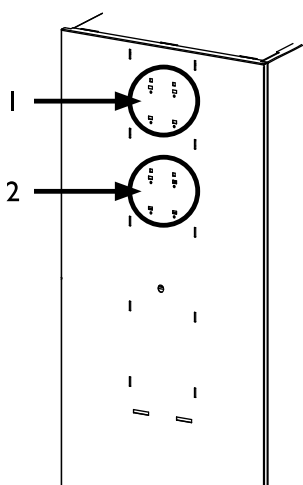


DANGER!

Risk of fatal electric shock!

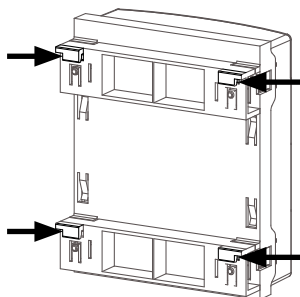
All electrical connection work must be carried out by qualified electricians only. Before opening the unit, safely disconnect the system from the power supply and prevent it from being switched back on!

There are 4 each recesses at different heights in the front panel of the unit for fastening the control panel:

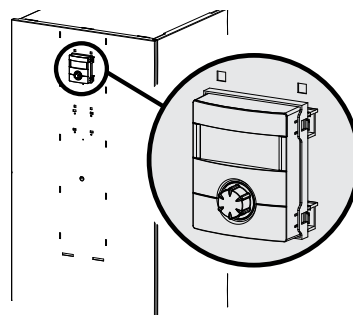


- 1 four upper recesses
- 2 four lower recesses

There are 4 hooks at the rear of the control panel, which are used to hook the control panel on the front panel of the unit:

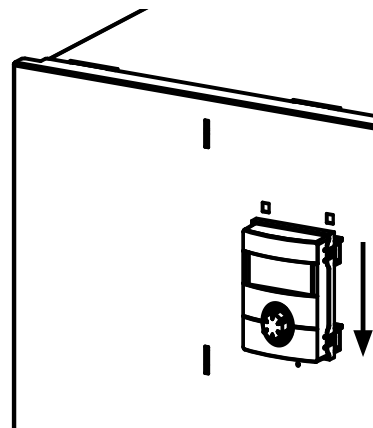


- ① Hook the control panel's hooks into the recesses of the front panel (either in the upper or lower recesses)...

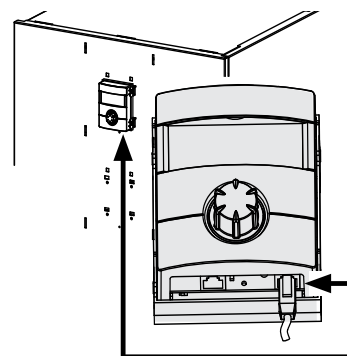


Example:
Control panel in upper recesses

- ② Push down the hooked in control panel, until it latches into place...



- ③ Push the control cable of the heating and heat pump controller into the **right-hand** socket on the underside of the control panel...



NOTE.

A connection to a computer or a network can be made via the left socket at the bottom of the control panel, thereby allowing the heating and heat pump controller to be controlled remotely from there. This requires a shielded network cable (category 6) to be laid through the unit during the electrical connection work.



Operating manual for the heating and heat pump controller, "Qualified technician" version, "Web server" section.

If this network cable is available, insert the network cable's RJ-45 connector into the left socket of the control panel.



NOTE.

The network cable can be exchanged at any time. In order to be able to connect it, the screen must first be removed.

Installation and removal of the screen

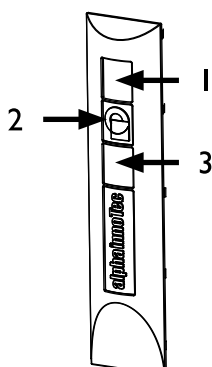
INSTALLING THE SCREEN



NOTE.

The masking plate is provided in the as delivered unit so that the control panel is inserted in the upper recesses of the front panel.

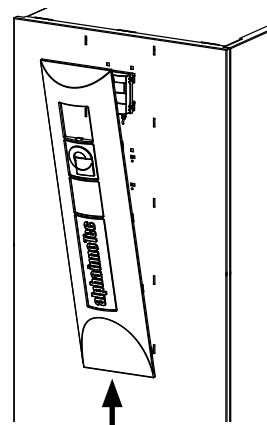
If the control panel has been inserted in the lower recesses of the front panel, you must first remove the masking plate's dummy cover and then reinsert it above the logo.



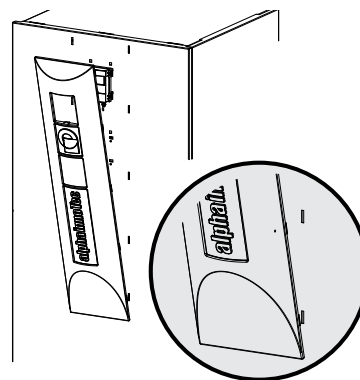
Screen at time of delivery:

- 1 Recess for control panel
- 2 Logo
- 3 Dummy cover

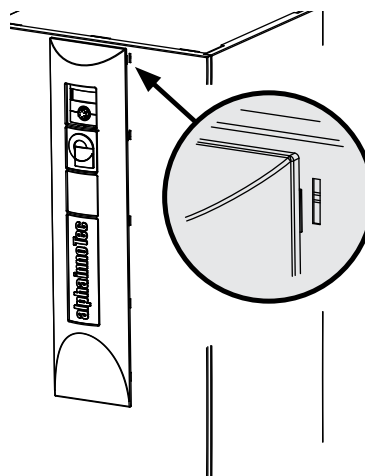
- ① First, insert the masking plate **below** in the slots provided in the front panel...



- ② Then, beginning on one side, latch the lugs on the masking plate **from the bottom up** into the slots provided in the front panel...



- ③ Then, on the opposite side, latch the lugs on the masking plate **from the bottom up** into the slots provided in the front panel...
- ④ Finally, press the upper latching lugs of the masking plate into the slots provided in the front panel.





DISMANTLING THE MASKING PLATE

In order to dismantle the masking plate, the latching lugs must be completely released **on one side first** by pushing **towards the middle of the masking plate**. Then release the lugs on the opposite side.

Domestic water heating

If the unit is to be used for domestic water heating, a 3-way changeover valve must be installed. This is not included with the unit and must be ordered separately.



IMPORTANT

Only use the manufacturer's original accessories.

Domestic water heating with the heat pump requires an additional heating water circuit (parallel) to the heating circuit. When connecting, make sure that the domestic hot water charge is not fed through a buffer tank in the heating circuit.



“Hydraulic connection” documents.

Domestic hot water tank

If the heat pump is to be used for domestic water heating, you must integrate special domestic hot water tanks in the heat pump system. Choose a storage volume so that the required quantity of domestic hot water is available even during a power failure.



NOTE:

The heat exchanger surface of the domestic hot water tank must be dimensioned so that the heating output of the heat pump is transferred with minimum spread.

You can choose a domestic hot water tank from our product range. They are optimally matched to your heat pump.



NOTE:

Integrate the domestic hot water tank in the heat pump system as shown in the hydraulic diagram for your system.



“Hydraulic connection” documents.

Commissioning

- ① Carry out a thorough installation check and work through the items on the general checklist...



“General checklist”.

The installation check will prevent damage to the heat pump system that can be caused by incorrectly carried out work.

Ensure that...

- **clockwise rotary field** of the load power supply (compressor).
- the heat pump **installation and assembly** is according to the requirements in this operating manual.
- the electrical installation work has been carried out properly.
- an **all-pole miniature circuit breaker** has been installed for the compressor. It must have at least 3 mm contact gap to IEC 60941-2.
- the heating circuit and the heat source are flushed, filled and bled thoroughly.
- all valves and shut-off devices of the heating circuit are open.
- all valves and shut-off devices of the heat source are open.
- all pipe systems and components of the system are leaktight.

- ② Carefully fill out and sign the completion report for heat pump systems...



“Completion report for heat pump systems”.

- ③ In Germany:
Send completion report for heat pump systems and general checklist to the manufacturer's factory customer service department.

Outside of Germany:

Send completion report for heat pump systems and general checklist to the manufacturer's local partner.



“Customer service” overview.

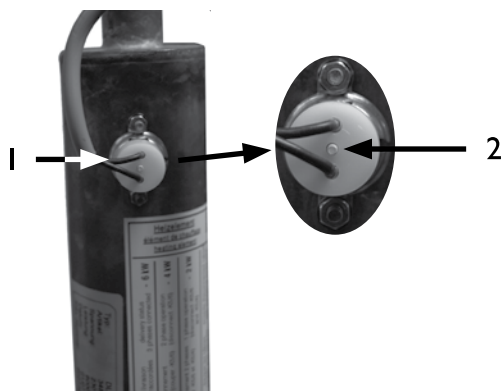
- ④ The heat pump system will be commissioned by customer service personnel authorized by the manufacturer. There is a fee for commissioning!



INFORMATION FOR UNITS WITH INTEGRATED ELECTRIC HEATING ELEMENT

SAFETY TEMPERATURE LIMITER

A safety temperature limiter is installed in the electric heating element. If the heat pump fails or there is air in the system, check whether the reset button of this safety temperature limiter has sprung out. If necessary, push it back in again.



- 1 Safety temperature button on electric heating element
- 2 Reset button

Dismantling



DANGER!

Risk of fatal electric shock!

Electrical work may only be carried out by qualified electricians.

Before opening the unit, safely disconnect the system from the power supply and prevent it from being switched back on!



WARNING!

Only qualified heating or refrigerating system personnel may dismantle the unit from the system.



WARNING!

Only qualified refrigerating personnel may dismantle the unit and its components.



IMPORTANT

Recycle or ensure proper disposal of unit components, refrigerants and oil according to the relevant regulations, standards and guidelines.

REMOVAL OF THE BUFFER BATTERY



IMPORTANT

Before scrapping the heating and heat pump controller, remove the buffer battery on the processor board. The battery can be pushed out using a screwdriver. Dispose of battery and electronic components in an environmentally friendly way.



Technical data/Scope of delivery

| | | |
|----------------------------------|---|---------------------------------|
| Heat pump type | Brine/water Air/water Water/water | • applicable — not applicable |
| Installation location | Indoors Outdoors | • applicable — not applicable |
| Conformity | | CE |
| Performance data | Heating capacity/COP at | |
| | W10/W35 Standard point to EN14511 2 compressors kW ... | |
| | 1 compressor kW ... | |
| | W10/W45 Standard point to EN14511 kW ... | |
| | W10/W35 Standard point acc. to EN255 2 compressors kW ... | |
| | 1 compressor kW ... | |
| Limits of use | Heating circuit °C | |
| | Heat source °C | |
| | additional operating points ... | |
| Sound | Sound pressure level averaged at distance of 1m around the machine (in free field) dB(A) | |
| | Sound power level to EN12102 dB | |
| Heat source | Flow rate: minimum flow nominal flow maximum flow l/h | |
| | Pressure loss heat pump Δp (with cooling Δp_K) Flow rate bar (bar) l/h | |
| | Free compression heat pump Δp (with cooling Δp_K) Flow rate bar (bar) l/h | |
| | Recommended heat source pump | |
| | Power consumption of the heat source pump at nominal throughput kW | |
| | Nominal power / electricity consumption of heat source pump kW A | |
| | Total compression of the recommended heat source pump at nominal throughput bar | |
| | Dirt trap, to be installed upstream of the heat pump (included in additional box) | |
| Heating circuit | Flow rate: minimum flow nominal flow maximum flow l/h | |
| | Pressure loss heat pump Δp (with cooling Δp_K) Flow rate bar (bar) l/h | |
| | Free compression heat pump Δp (with cooling Δp_K) Flow rate bar (bar) l/h | |
| General unit data | Dimensions (see dimensioned drawing for the specified unit size) unit size | |
| | Total weight (including cooling) kg (kg) | |
| | Additional weight module 1 kg | |
| | Additional weight module 2 kg | |
| | Connections Heating circuit ... | |
| | Heat source ... | |
| | Refrigerant Refrigerant type Quantity ... kg | |
| Electrics | Voltage code all-pole circuit breaker heat pump *) ... A | |
| | Voltage code circuit breaker control voltage *) ... A | |
| | Voltage code circuit breaker electric heating element *) A | |
| Heat pump | Effective power consumption in the standard point W10/W35 to EN14511: Power consumption current consumption $\cos\phi$ kW A ... | |
| | Maximum machine current within the use limits A | |
| | Starting current: direct with soft starter A A | |
| | Degree of protection IP | |
| | Output, electric heating element 3 2 1 phase kW kW kW | |
| Components | Circulation pump, heating circuit at nominal flow rate: Power consumption current consumption kW A | |
| | Circulation pump, heat source at nominal flow rate: Power consumption current consumption kW A | |
| Passive cooling function | Specification only for units with designator K: Cooling output at nominal flow rate (15°C heat source, 25°C heating water) kW | |
| Safety equipment | Safety component heating circuit Safety component heat source Incl. in scope of delivery: • yes — no | |
| Heating and heat pump controller | Incl. in scope of delivery: • yes — no | |
| Electronic soft starter | integrated: • yes — no | |
| Expansion vessels | Heat source: Scope of delivery Volume Initial pressure • yes — no bar | |
| | Heating circuit: Scope of delivery Volume Initial pressure • yes — no bar | |
| Overflow valve | integrated: • yes — no | |
| Vibration decouplers | Heating circuit heat source Incl. in scope of delivery: • yes — no | |

UK813241-a

*) comply with local regulations n.d. = not detectable



| WWC100HX | WWC130HX | WWC160HX | WWC190HX | WWC220HX |
|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| — — • | — — • | — — • | — — • | — — • |
| • — | • — | • — | • — | • — |
| • | • | • | • | • |
| — | — | — | — | — |
| 11,0 5,6 | 12,9 5,5 | 14,7 5,6 | 18,6 5,6 | 21,8 5,7 |
| — | — | — | — | — |
| — | — | — | — | — |
| 11,2 5,7 | 12,7 5,7 | 14,8 5,7 | 18,6 5,7 | 21,8 6,1 |
| 20 - 65 | 20 - 65 | 20 - 65 | 20 - 65 | 20 - 65 |
| 7 - 25 | 7 - 25 | 7 - 25 | 7 - 25 | 7 - 25 |
| — | — | — | — | — |
| 40 | 40 | 40 | 40 | 43 |
| 53 | 53 | 53 | 53 | 56 |
| 2200 2200 4100 | 2600 2600 4500 | 3000 3000 5200 | 3800 3800 6500 | 4400 4400 7700 |
| 0,06 (—) 2200 | 0,1 (—) 2600 | 0,11 (—) 3000 | 0,16 (—) 3800 | 0,23 (—) 4400 |
| — | — | — | — | — |
| Grundfos SP 3A-6 | Grundfos SP 3A-6 | Grundfos SP 3A-6 | Grundfos SP 3A-6 | Grundfos SP 5A-6 |
| 0 | 0 | 0 | 0,38 | 0,54 |
| 0,38 1,4 | 0,38 1,4 | 0,38 1,4 | 0,38 1,4 | 0,55 2,2 |
| 3 | 3 | 3 | 1,76 | 2,67 |
| 5/4" | 5/4" | 5/4" | 5/4" | 6/4" |
| 950 1900 2400 | 1100 2200 2800 | 1300 2500 3100 | 1600 3100 3900 | 1900 3700 4700 |
| — | — | — | — | — |
| 0,34 (—) 1350 | 0,6 (—) 1600 | 0,56 (—) 1800 | 0,55 (—) 2200 | 0,46 (—) 2700 |
| 1 | 1 | 1 | 1 | 1 |
| 213 (—) | 216 (—) | 219 (—) | 227 (—) | 235 (—) |
| — | — | — | — | — |
| — | — | — | — | — |
| R 5/4" AG | R 5/4" AG | R 5/4" AG | R 5/4" AG | R 5/4" AG |
| R 5/4" AG | R 5/4" AG | R 5/4" AG | R 5/4" AG | R 5/4" AG |
| R407c 3,05 | R407c 3,4 | R407c 3,95 | R407c 4,3 | R407c 4,5 |
| 3~/PE/400V/50Hz C10 | 3~/PE/400V/50Hz C10 | 3~/PE/400V/50Hz C10 | 3~/PE/400V/50Hz C13 | 3~/PE/400V/50Hz C13 |
| 1~/N/PE/230V/50Hz B10 | 1~/N/PE/230V/50Hz B10 | 1~/N/PE/230V/50Hz B10 | 1~/N/PE/230V/50Hz B10 | 1~/N/PE/230V/50Hz B10 |
| 3~/N/PE/400V/50Hz C10 | 3~/N/PE/400V/50Hz C10 | 3~/N/PE/400V/50Hz C16 | 3~/N/PE/400V/50Hz C16 | 3~/N/PE/400V/50Hz C16 |
| 1,96 3,8 0,74 | 2,35 4,4 0,77 | 2,6 4,6 0,81 | 3,27 6,0 0,79 | 3,82 7,0 0,79 |
| 6 | 7 | 8 | 9,4 | 11,0 |
| 30 — | — 20 | — 25 | — 28 | — 30 |
| 20 | 20 | 20 | 20 | 20 |
| 6 4 2 | 6 4 2 | 9 6 3 | 9 6 3 | 9 6 3 |
| 0,07 n.n. | 0,16 n.n. | 0,16 n.n. | 0,17 n.n. | 0,18 n.n. |
| — — | — — | — — | — — | — — |
| — | — | — | — | — |
| • — | • — | • — | • — | • — |
| • | • | • | • | • |
| — | • | • | • | • |
| — — — | — — — | — — — | — — — | — — — |
| • 25l 1,5 | • 25l 1,5 | • 35l 1,5 | • 35l 1,5 | • 50l 1,5 |
| • | • | • | • | • |
| • • | • • | • • | • • | • • |
| 813233-d | 813234-d | 813235-d | 813236-b | 813237-f |



Technical data/Scope of delivery

| | | |
|----------------------------------|---|---------------------------------|
| Heat pump type | Brine/water Air/water Water/water | • applicable — not applicable |
| Installation location | Indoors Outdoors | • applicable — not applicable |
| Conformity | | CE |
| Performance data | Heating capacity/COP at | |
| | W10/W35 Standard point to EN14511 2 compressors kW ... | |
| | 1 compressor kW ... | |
| | W10/W45 Standard point to EN14511 kW ... | |
| | W10/W35 Standard point acc. to EN255 2 compressors kW ... | |
| | 1 compressor kW ... | |
| Limits of use | Heating circuit °C | |
| | Heat source °C | |
| | additional operating points ... | |
| Sound | Sound pressure level averaged at distance of 1m around the machine (in free field) dB(A) | |
| | Sound power level to EN12102 dB | |
| Heat source | Flow rate: minimum flow nominal flow maximum flow l/h | |
| | Pressure loss heat pump Δp (with cooling Δp_K) Flow rate bar (bar) l/h | |
| | Free compression heat pump Δp (with cooling Δp_K) Flow rate bar (bar) l/h | |
| | Recommended heat source pump | |
| | Power consumption of the heat source pump at nominal throughput kW | |
| | Nominal power / electricity consumption of heat source pump kW A | |
| | Total compression of the recommended heat source pump at nominal throughput bar | |
| | Dirt trap, to be installed upstream of the heat pump (included in additional box) | |
| Heating circuit | Flow rate: minimum flow nominal flow maximum flow l/h | |
| | Pressure loss heat pump Δp (with cooling Δp_K) Flow rate bar (bar) l/h | |
| | Free compression heat pump Δp (with cooling Δp_K) Flow rate bar (bar) l/h | |
| General unit data | Dimensions (see dimensioned drawing for the specified unit size) unit size | |
| | Total weight (including cooling) kg (kg) | |
| | Additional weight module 1 kg | |
| | Additional weight module 2 kg | |
| | Connections Heating circuit ... | |
| | Heat source ... | |
| | Refrigerant Refrigerant type Quantity ... kg | |
| Electrics | Voltage code all-pole circuit breaker heat pump *) ... A | |
| | Voltage code circuit breaker control voltage *) ... A | |
| | Voltage code circuit breaker electric heating element *) A | |
| Heat pump | Effective power consumption in the standard point W10/W35 to EN14511: Power consumption current consumption cos ϕ kW A ... | |
| | Maximum machine current within the use limits A | |
| | Starting current: direct with soft starter A A | |
| | Degree of protection IP | |
| | Output, electric heating element 3 2 1 phase kW kW kW | |
| Components | Circulation pump, heating circuit at nominal flow rate: Power consumption current consumption kW A | |
| | Circulation pump, heat source at nominal flow rate: Power consumption current consumption kW A | |
| Passive cooling function | Specification only for units with designator K: Cooling output at nominal flow rate (15°C heat source, 25°C heating water) kW | |
| Safety equipment | Safety component heating circuit Safety component heat source Incl. in scope of delivery: • yes — no | |
| Heating and heat pump controller | Incl. in scope of delivery: • yes — no | |
| Electronic soft starter | integrated: • yes — no | |
| Expansion vessels | Heat source: Scope of delivery Volume Initial pressure • yes — no bar | |
| | Heating circuit: Scope of delivery Volume Initial pressure • yes — no bar | |
| Overflow valve | integrated: • yes — no | |
| Vibration decouplers | Heating circuit heat source Incl. in scope of delivery: • yes — no | |

UK813241-a

*) comply with local regulations n.d. = not detectable

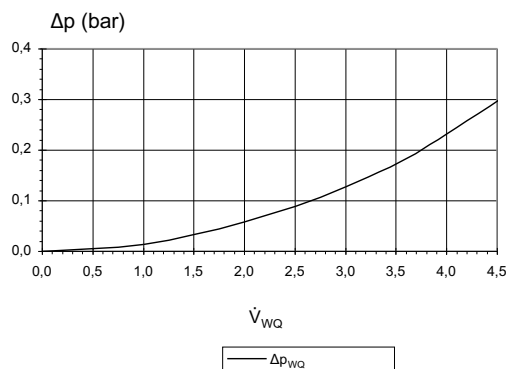
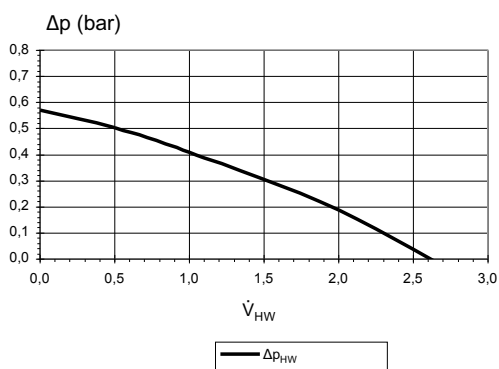
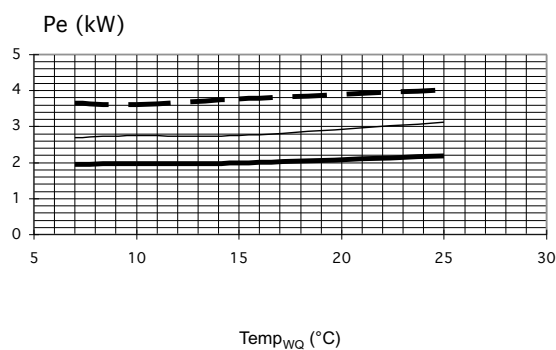
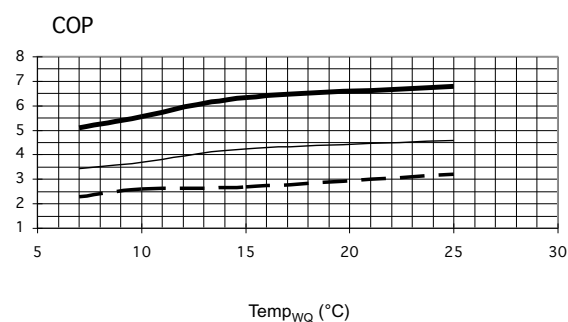
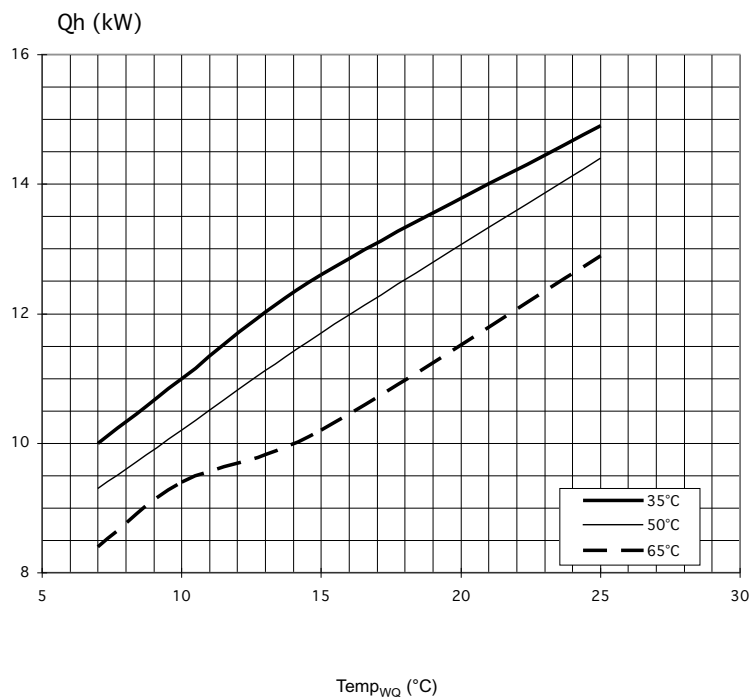


| | WWC280X | WWC440X |
|--|-------------------------|-------------------------|
| | — — • | — — • |
| | • — | • — |
| | • | • |
| | — | 42,2 5,3 |
| | 27,0 5,1 | 21,3 5,4 |
| | — | — |
| | — | 42,2 5,4 |
| | 27,0 5,2 | 21,3 5,5 |
| | 20 - 60 | 20 - 60 |
| | 7 - 25 | 7 - 25 |
| | — | — |
| | 47 | 47 |
| | 60 | 60 |
| | 5300 5300 9300 | 8500 8500 14700 |
| | 0,18 (—) 5300 | 0,35 (—) 8500 |
| | — | — |
| | Grundfos SP 8A-5 | Grundfos SP 8A-5 |
| | 0,63 | 0,73 |
| | 0,75 2,3 | 0,75 2,3 |
| | 2,40 | 2,0 |
| | 6/4" | 6/4" |
| | 2300 4600 5800 | 3600 7200 9000 |
| | — | — |
| | 0,4 (—) 3300 | 0,44 (—) 5200 |
| | 2 | 2 |
| | 365 (—) | 402 (—) |
| | — | — |
| | — | — |
| | R 6/4" AG | R 6/4" AG |
| | R 6/4" AG | R 6/4" AG |
| | R407c 4,4 | R407c 8,4 |
| | 3~/PE/400V/50Hz C20 | 3~/PE/400V/50Hz C32 |
| | 1~/N/PE/230V/50Hz B10 | 1~/N/PE/230V/50Hz B10 |
| | — — — | — — — |
| | 5,29 8,8 0,86 | 2x 3,9 2x 6,8 0,83 |
| | 14,8 | 2x 11,8 |
| | — 29,5 | — 22 |
| | 20 | 20 |
| | — — — | — — — |
| | 0,22 n.n. | 0,39 n.n. |
| | — — | — — |
| | — | — |
| | • — | • — |
| | • | • |
| | • | • |
| | — — — | — — — |
| | • 50l 1,5 | • 80l 1,5 |
| | • | • |
| | • • | • • |
| | 813238-d | 813239-d |



WWC 100H/X

Performance curves



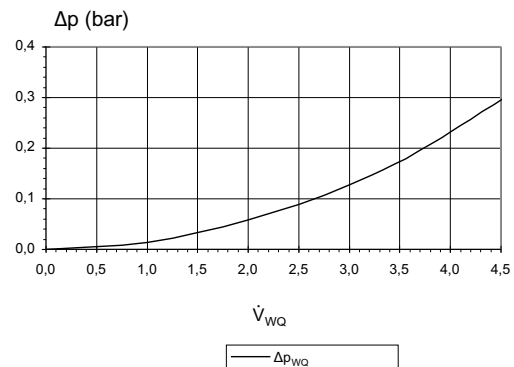
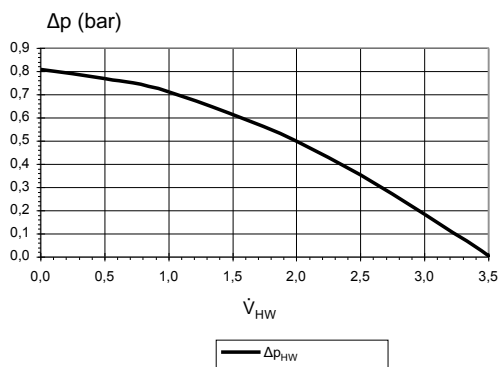
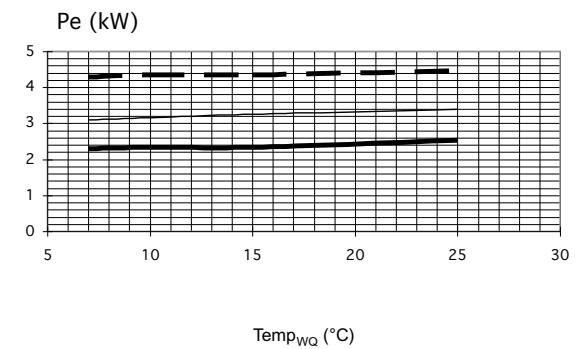
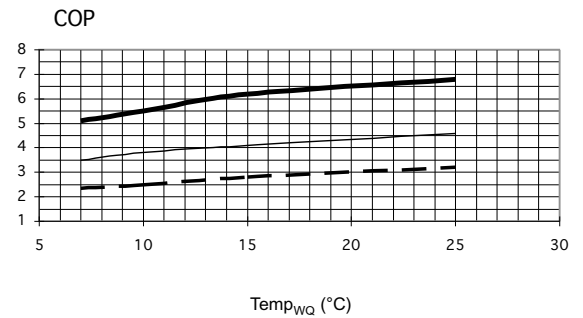
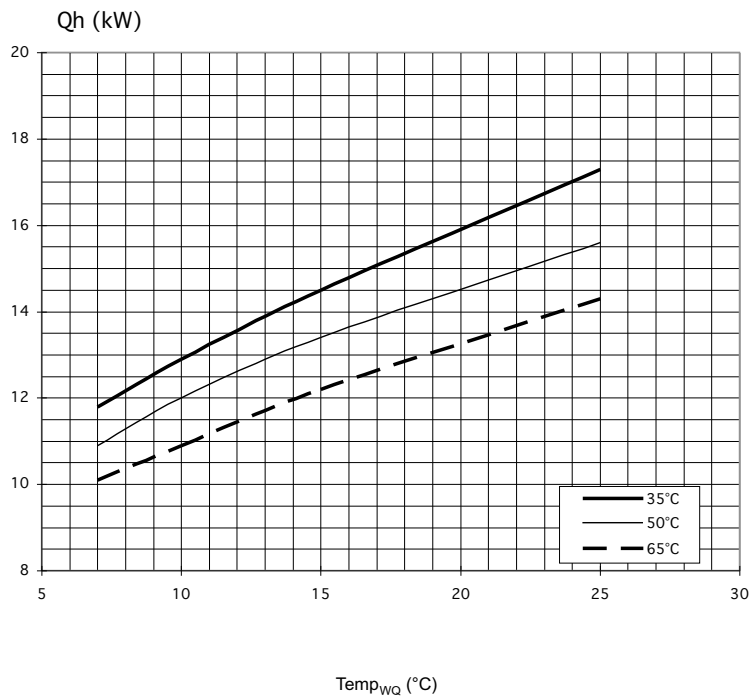
823201

| | |
|--------------------|--|
| Legend: | UK823200 |
| \dot{V}_{HW} | Heating water flow rate |
| \dot{V}_{WQ} | Heat source flow rate |
| Temp _{WQ} | Heat source temperature |
| Q _h | Heating capacity |
| Pe | Power consumption |
| COP | Coefficient of performance / efficiency rating |
| Δp _{HW} | Free compression, heating circuit |
| Δp _{WQ} | Heat source pressure loss |
| CP | Compressor |



Performance curves

WWC 130H/X



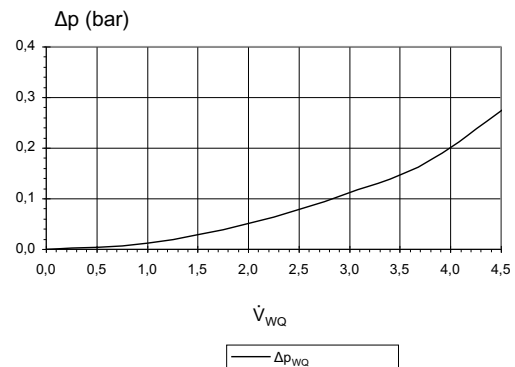
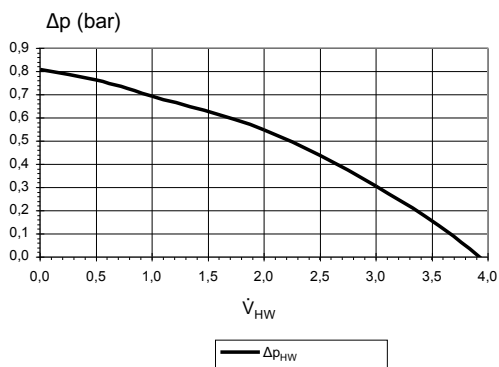
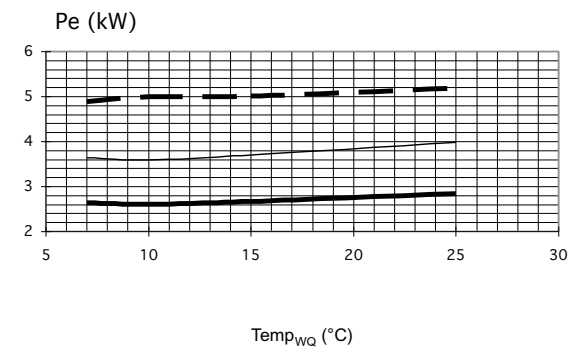
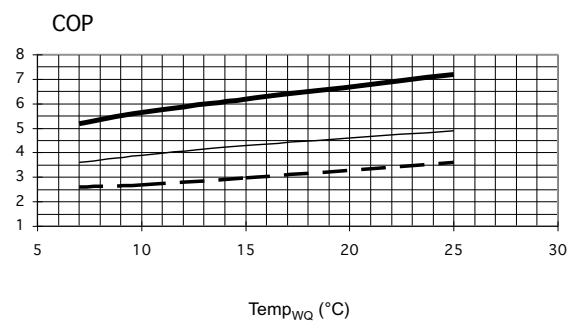
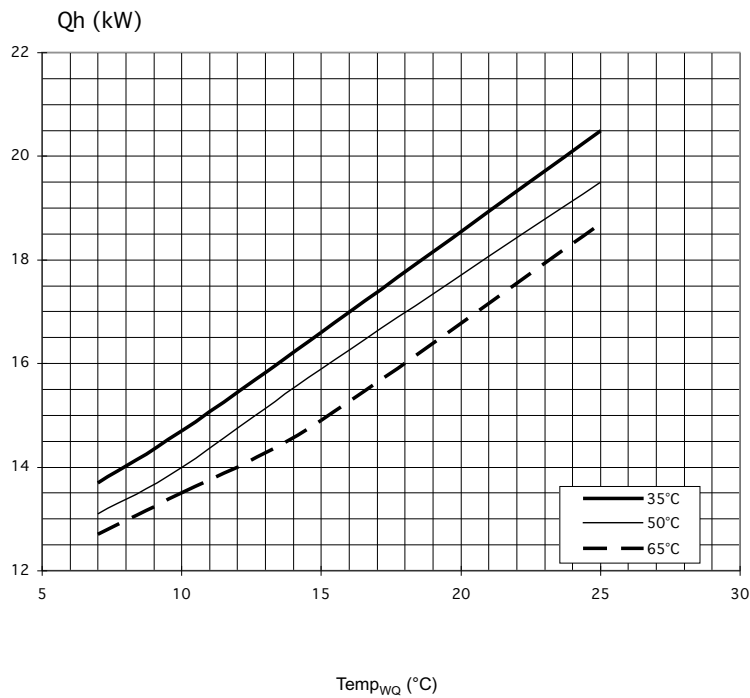
823002

| | |
|--------------------|--|
| Legend: | UK823200 |
| V _{HW} | Heating water flow rate |
| V _{WQ} | Heat source flow rate |
| Temp _{WQ} | Heat source temperature |
| Q _h | Heating capacity |
| Pe | Power consumption |
| COP | Coefficient of performance / efficiency rating |
| Δp _{HW} | Free compression, heating circuit |
| Δp _{WQ} | Heat source pressure loss |
| CP | Compressor |



WWC 160H/X

Performance curves



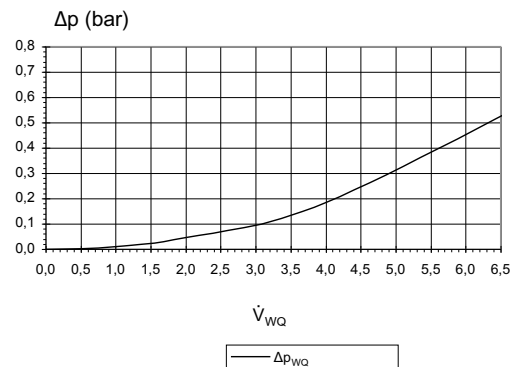
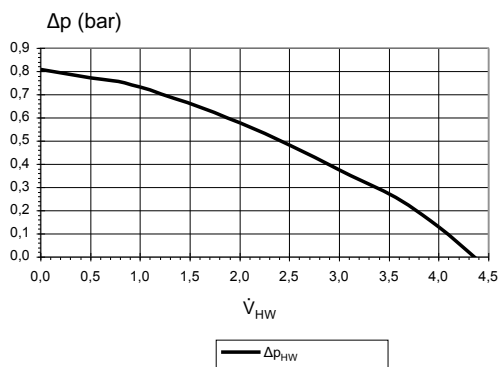
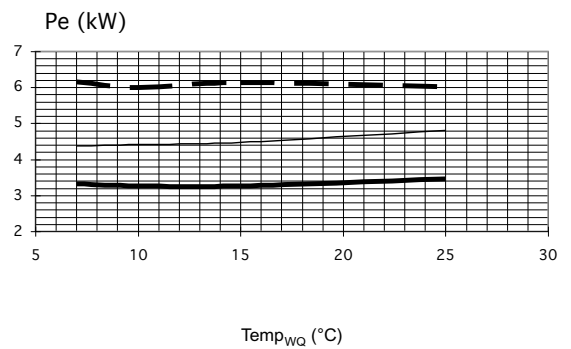
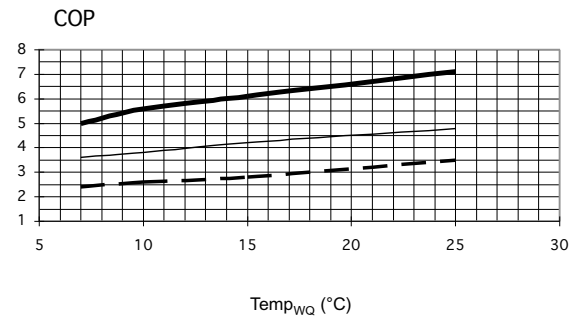
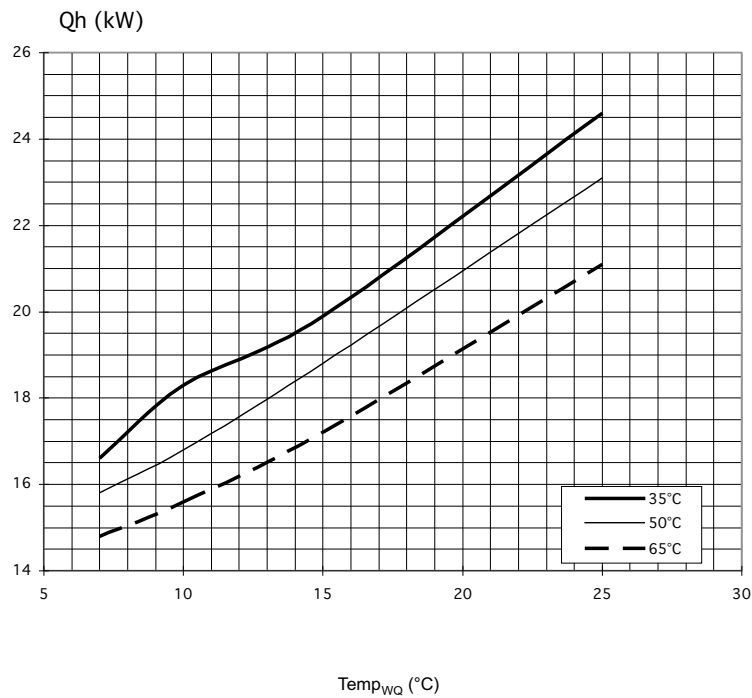
823203

| | |
|--------------------|--|
| Legend: | UK823200 |
| V _{HW} | Heating water flow rate |
| V _{WQ} | Heat source flow rate |
| Temp _{WQ} | Heat source temperature |
| Q _h | Heating capacity |
| Pe | Power consumption |
| COP | Coefficient of performance / efficiency rating |
| Δp _{HW} | Free compression, heating circuit |
| Δp _{WQ} | Heat source pressure loss |
| CP | Compressor |



Performance curves

WWC 190H/X



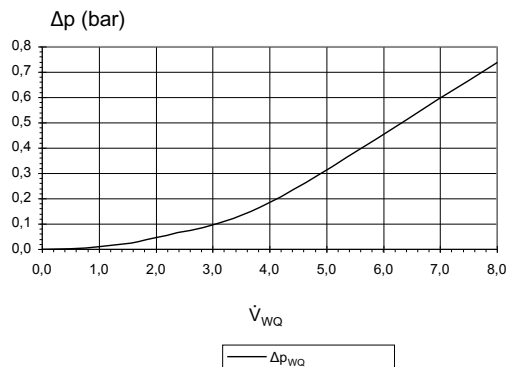
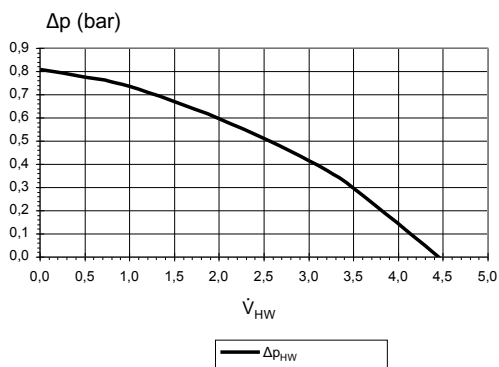
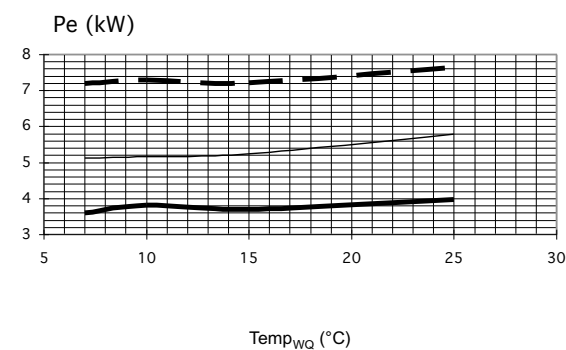
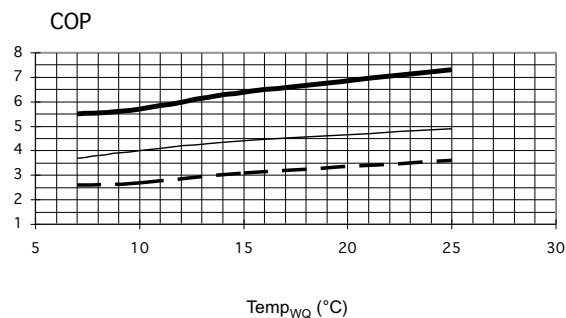
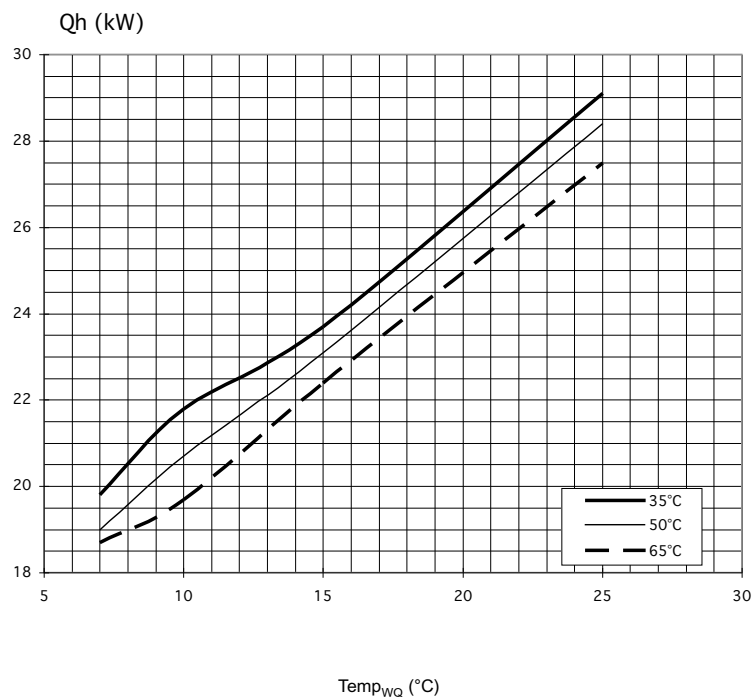
823204

| | |
|--------------------|--|
| Legend: | UK823200 |
| \dot{V}_{HW} | Heating water flow rate |
| \dot{V}_{WQ} | Heat source flow rate |
| Temp _{WQ} | Heat source temperature |
| Q _h | Heating capacity |
| Pe | Power consumption |
| COP | Coefficient of performance / efficiency rating |
| Δp _{HW} | Free compression, heating circuit |
| Δp _{WQ} | Heat source pressure loss |
| CP | Compressor |



WWC 220H/X

Performance curves



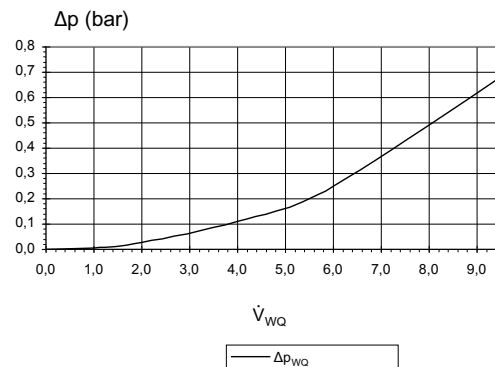
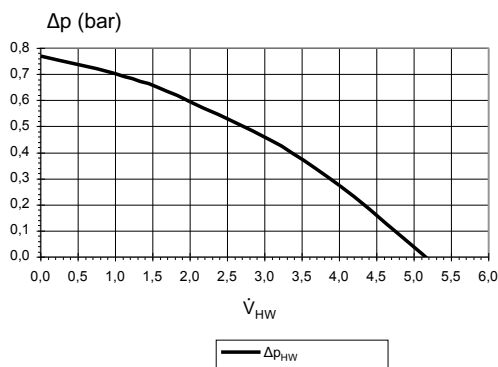
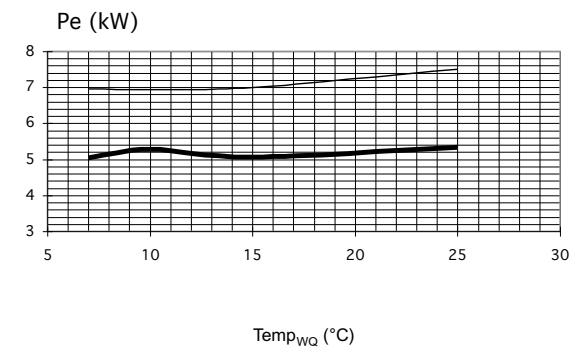
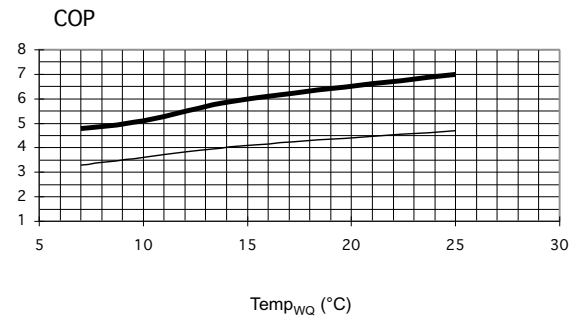
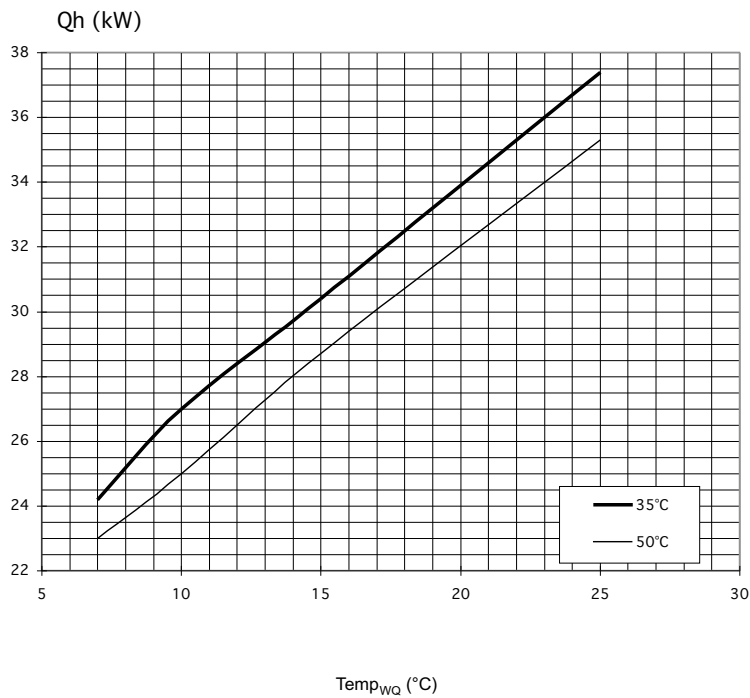
823205

| | |
|-----------------|--|
| Legend: | UK823200 |
| \dot{V}_{HW} | Heating water flow rate |
| \dot{V}_{WQ} | Heat source flow rate |
| $Temp_{WQ}$ | Heat source temperature |
| Q_h | Heating capacity |
| Pe | Power consumption |
| COP | Coefficient of performance / efficiency rating |
| Δp_{HW} | Free compression, heating circuit |
| Δp_{WQ} | Heat source pressure loss |
| CP | Compressor |



Performance curves

WWC 280X



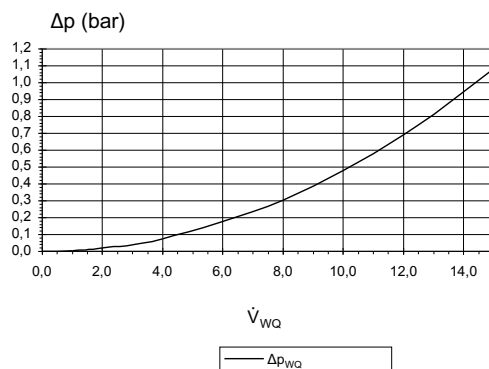
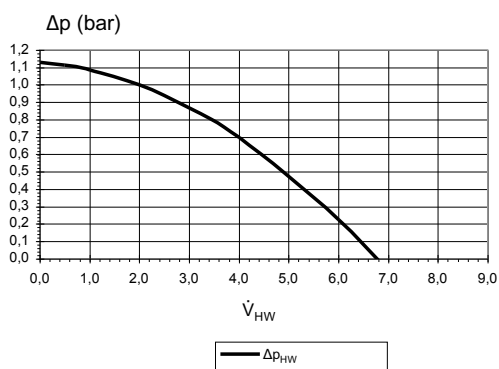
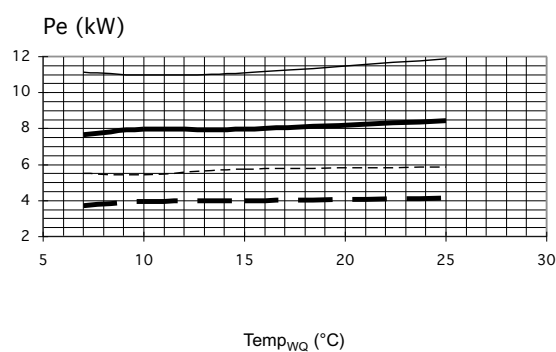
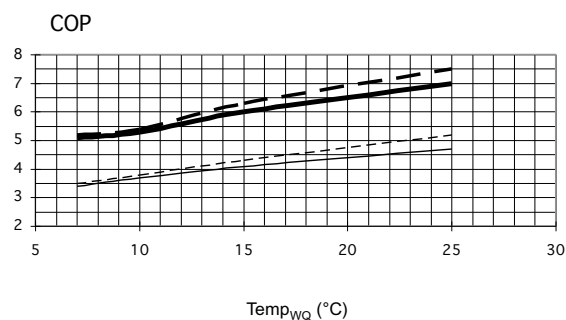
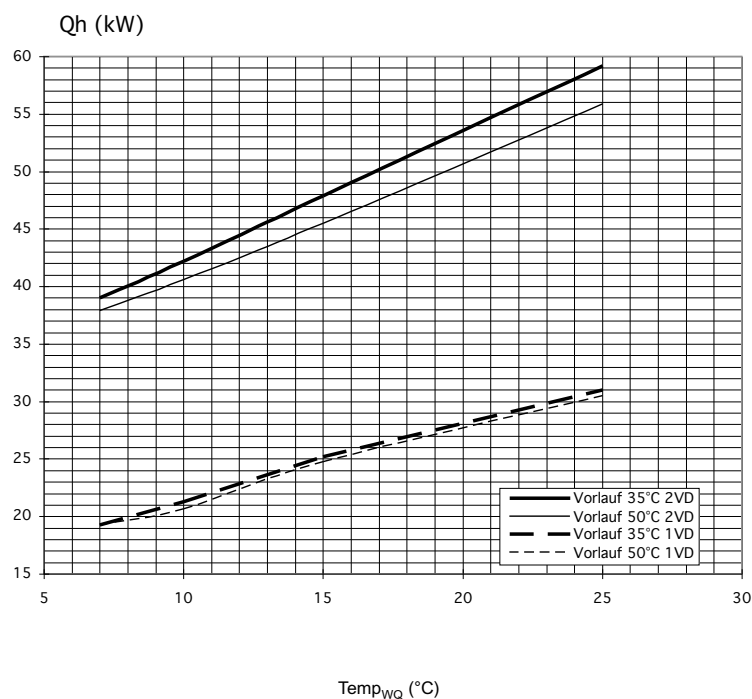
823206

| | |
|--------------------|--|
| Legend: | UK823200 |
| \dot{V}_{HW} | Heating water flow rate |
| \dot{V}_{WQ} | Heat source flow rate |
| Temp _{WQ} | Heat source temperature |
| Qh | Heating capacity |
| Pe | Power consumption |
| COP | Coefficient of performance / efficiency rating |
| Δp _{HW} | Free compression, heating circuit |
| Δp _{WQ} | Heat source pressure loss |
| CP | Compressor |



WWC 440X

Performance curves

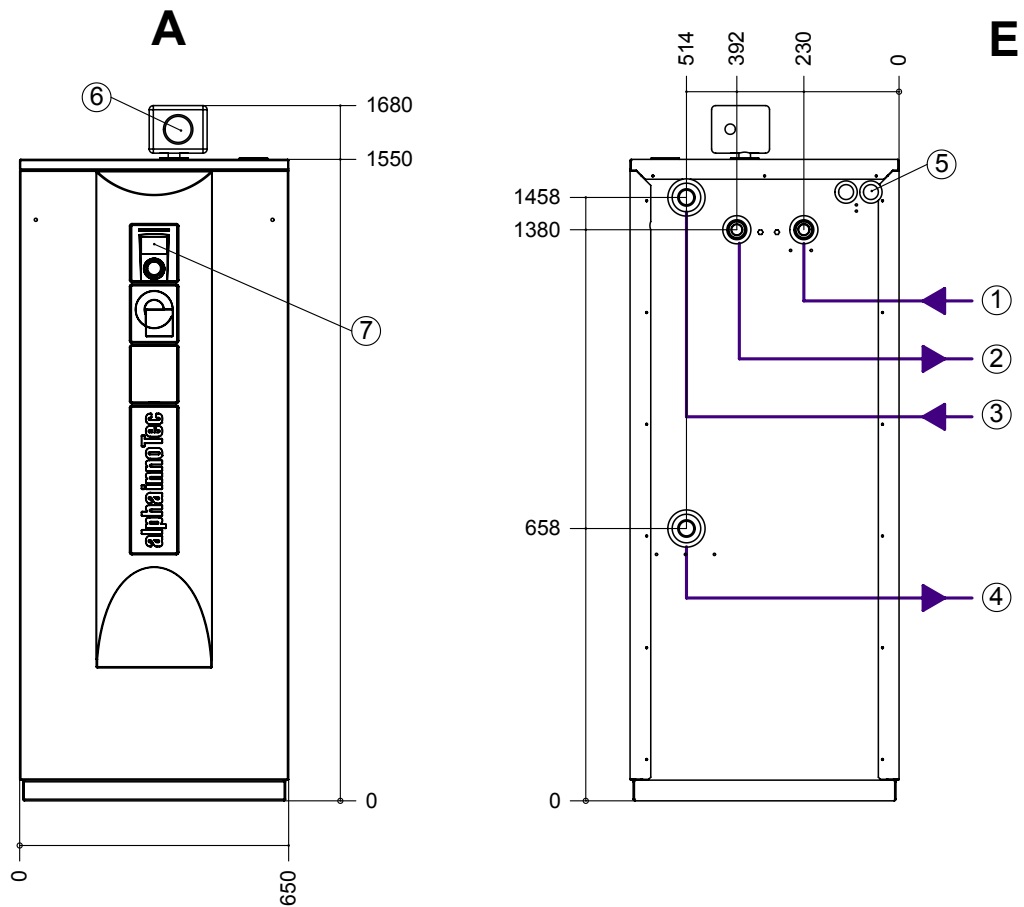


823207

| | |
|--------------------|--|
| Legend: | UK823200 |
| V _{HW} | Heating water flow rate |
| V _{WQ} | Heat source flow rate |
| Temp _{WQ} | Heat source temperature |
| Q _h | Heating capacity |
| Pe | Power consumption |
| COP | Coefficient of performance / efficiency rating |
| Δp _{HW} | Free compression, heating circuit |
| Δp _{WQ} | Heat source pressure loss |
| CP | Compressor |



Dimensioned drawings WWC 100H/X – WWC 220H/X



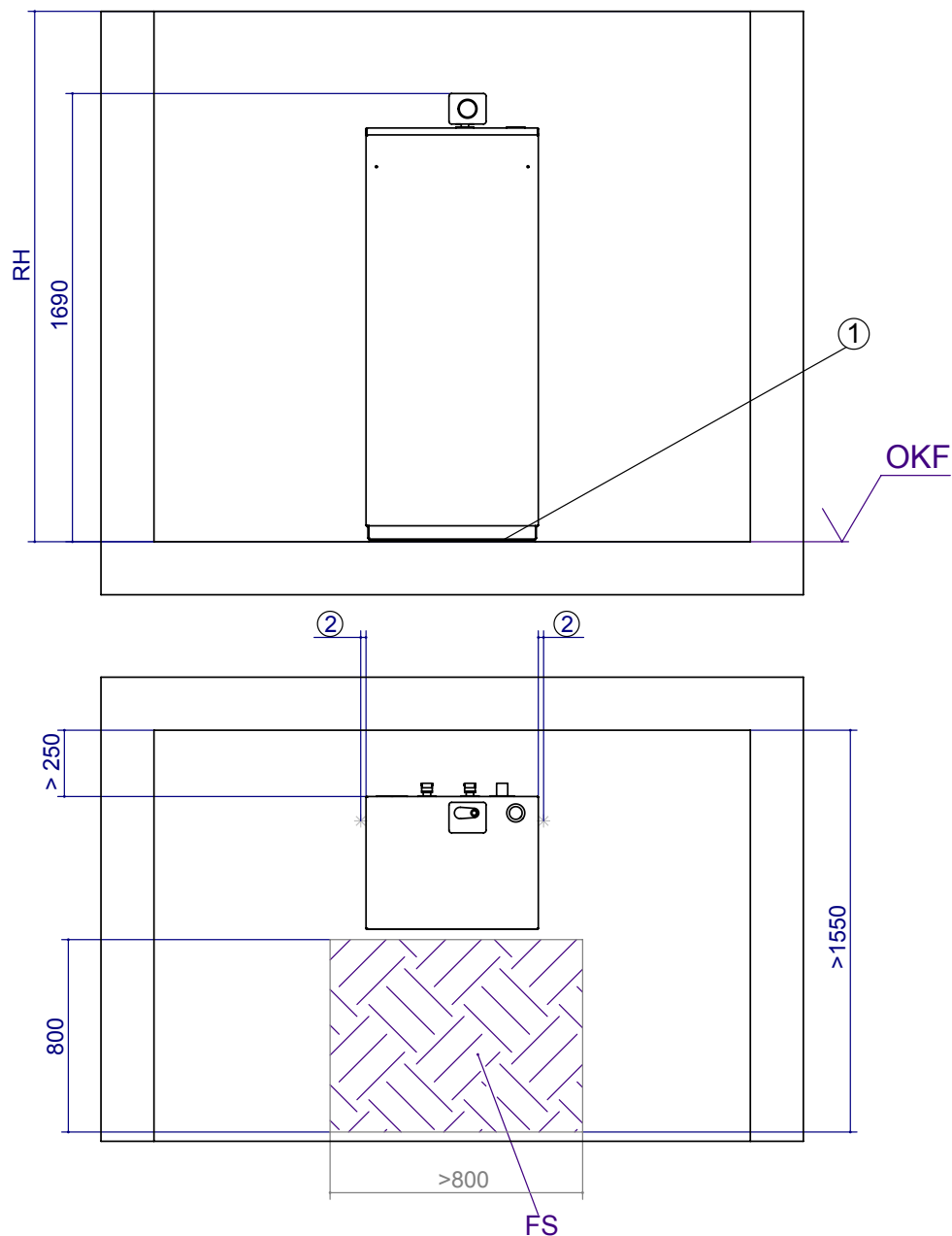
Legend: UK819258b
All dimensions in mm.

A Front view
C Top view
E Rear view

| Item | Designation | Dim. |
|------|---|----------|
| 1 | Heating water inlet (return); flat seat | G 1 1/4" |
| 2 | Heating water outlet (flow); flat seat | G 1 1/4" |
| 3 | Heat source inlet at the unit; flat seat | G 1 1/4" |
| 4 | Heat source outlet at the unit; flat seat | G 1 1/4" |
| 5 | Penetration for electric/sensor cables | --- |
| 6 | Safety assembly (in extra box) | --- |
| 7 | Control panel (in extra box) | --- |



Installation plan WWC 100H/X – WWC 220H/X



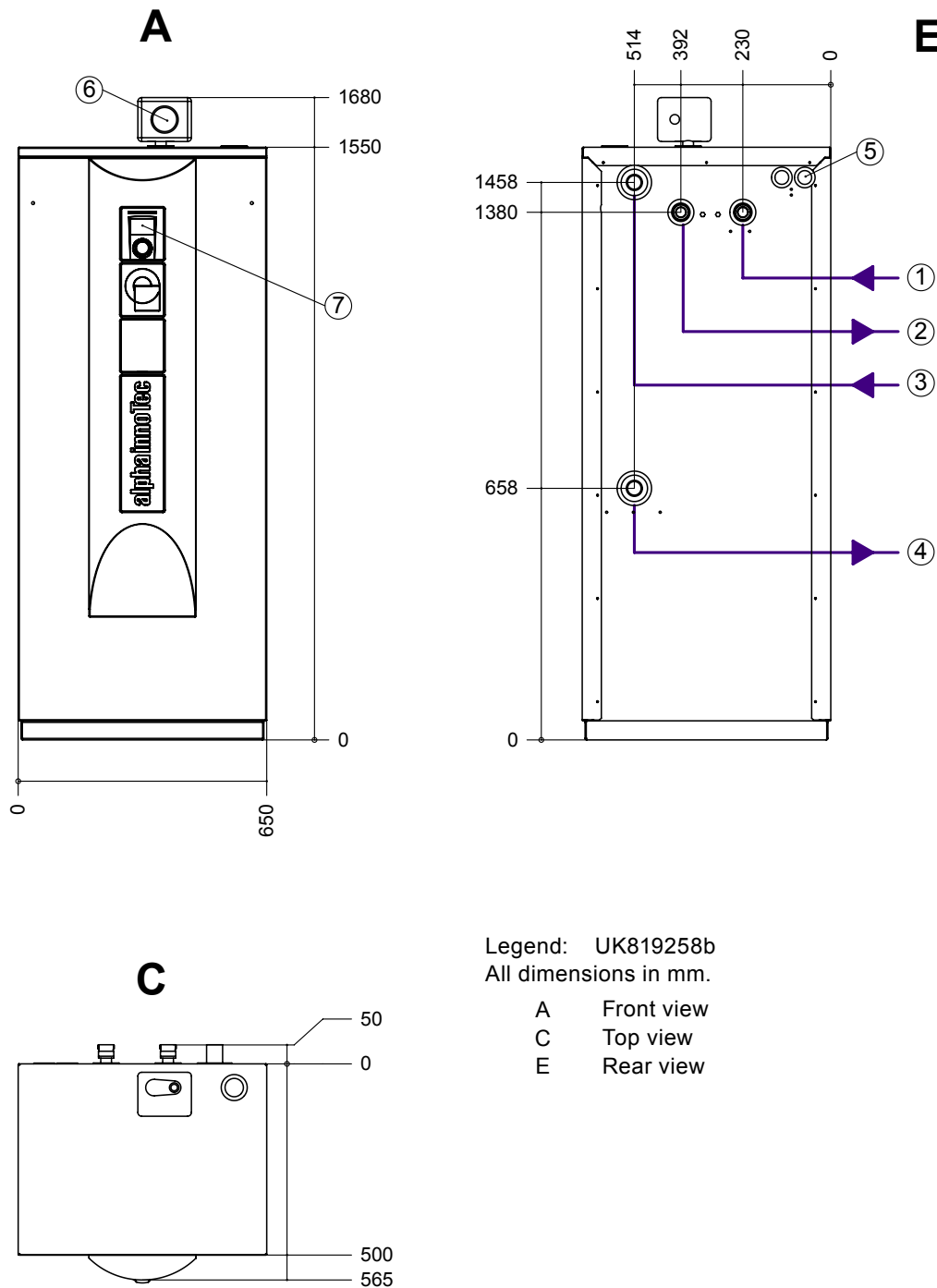
Legend: UK819260a
All dimensions in mm.

RH Minimum room height 2000
OKF Finished floor level
FS Shaded area = free space for service purposes

1 Unit installation on Sylomer strips (in extra box)
2 20 Distance to next object



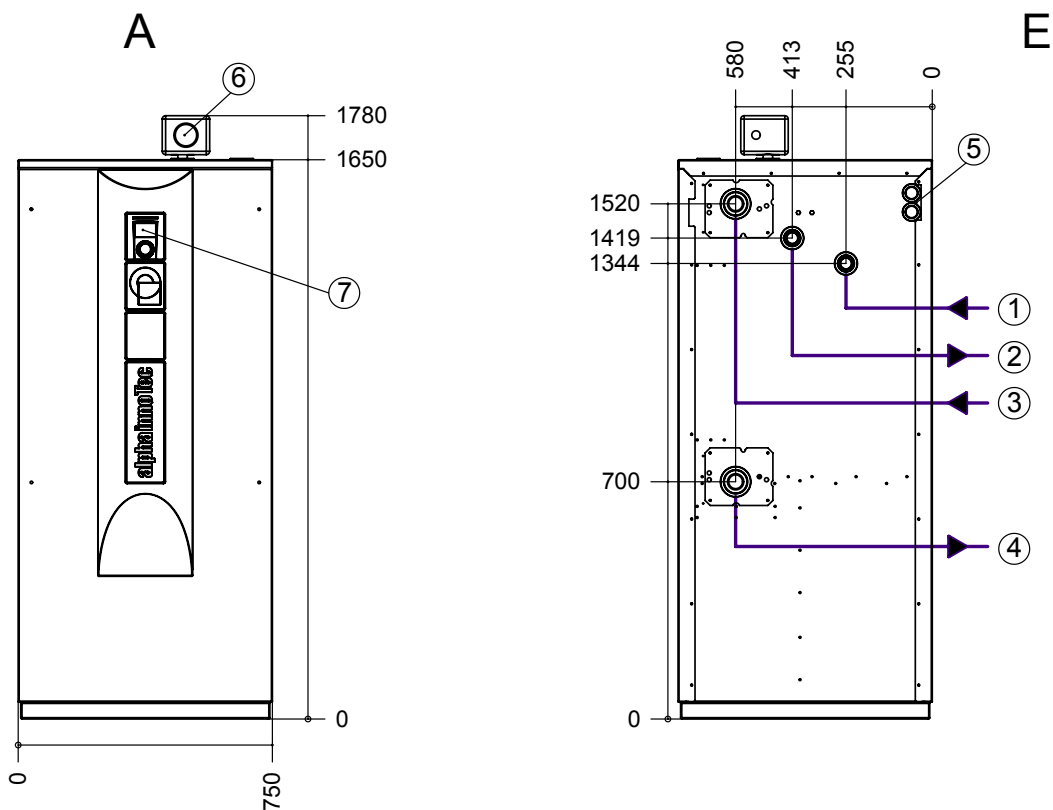
Dimensioned drawings WWC 280X



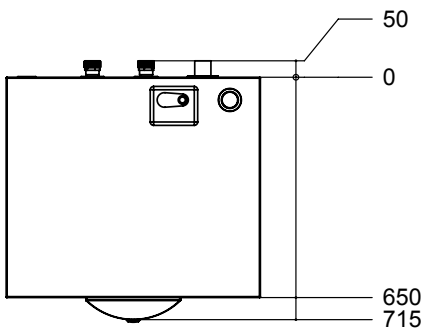
| Item | Designation | Dim. |
|------|---|----------|
| 1 | Heating water inlet (return); flat seat | G 1 1/4" |
| 2 | Heating water outlet (flow); flat seat | G 1 1/4" |
| 3 | Heat source inlet at the unit; flat seat | G 1 1/4" |
| 4 | Heat source outlet at the unit; flat seat | G 1 1/4" |
| 5 | Penetration for electric/sensor cables | --- |
| 6 | Safety assembly (in extra box) | --- |
| 7 | Control panel (in extra box) | --- |



Dimensioned drawings WWC 440X

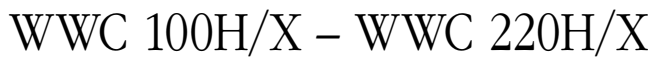


Legend: UK819258b
 All dimensions in mm.
 A Front view
 C Top view
 E Rear view



| Item | Designation | Dim. |
|------|---|----------|
| 1 | Heating water inlet (return); flat seat | G 1 1/4" |
| 2 | Heating water outlet (flow); flat seat | G 1 1/4" |
| 3 | Heat source inlet at the unit; flat seat | G 1 1/4" |
| 4 | Heat source outlet at the unit; flat seat | G 1 1/4" |
| 5 | Penetration for electric/sensor cables | --- |
| 6 | Safety assembly (in extra box) | --- |
| 7 | Control panel (in extra box) | --- |





Wasser Wasser Compact 10 - 22kW

Legende:

DE831150

Funktion

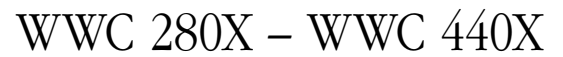
Bezeichnung

A1
A2
A3
A4
F10
F12
M3

Klemmen

ASD
BUP
EVU
FP1
HUP
MA1/MIS
MZ1/MIS
MOT
RFV
TB1
TBW
TRL
VBO
X0-X4
X7

Durchflussschalter: Intern verdrahtet
Zubehör: Brauchwasser Umschaltventil
Energie Versorger Kontakt; bei Freigabe geschlossen; Brücke wenn keine Sperrzeit
Pumpe Mischkreis 1
Heizkreisumwälzpumpe; intern verdrahtet
Lade/Entlade 1 auf
Motor: Schutz; intern verdrahtet
keine Funktion
Zubehör: Raumtemperatur
Aussenfühler
T1
Fühler Mischkreis 1
Zubehör: Brauchwasserfühler/thermostat
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Wasser Wasser Compact 28 - 44 kW

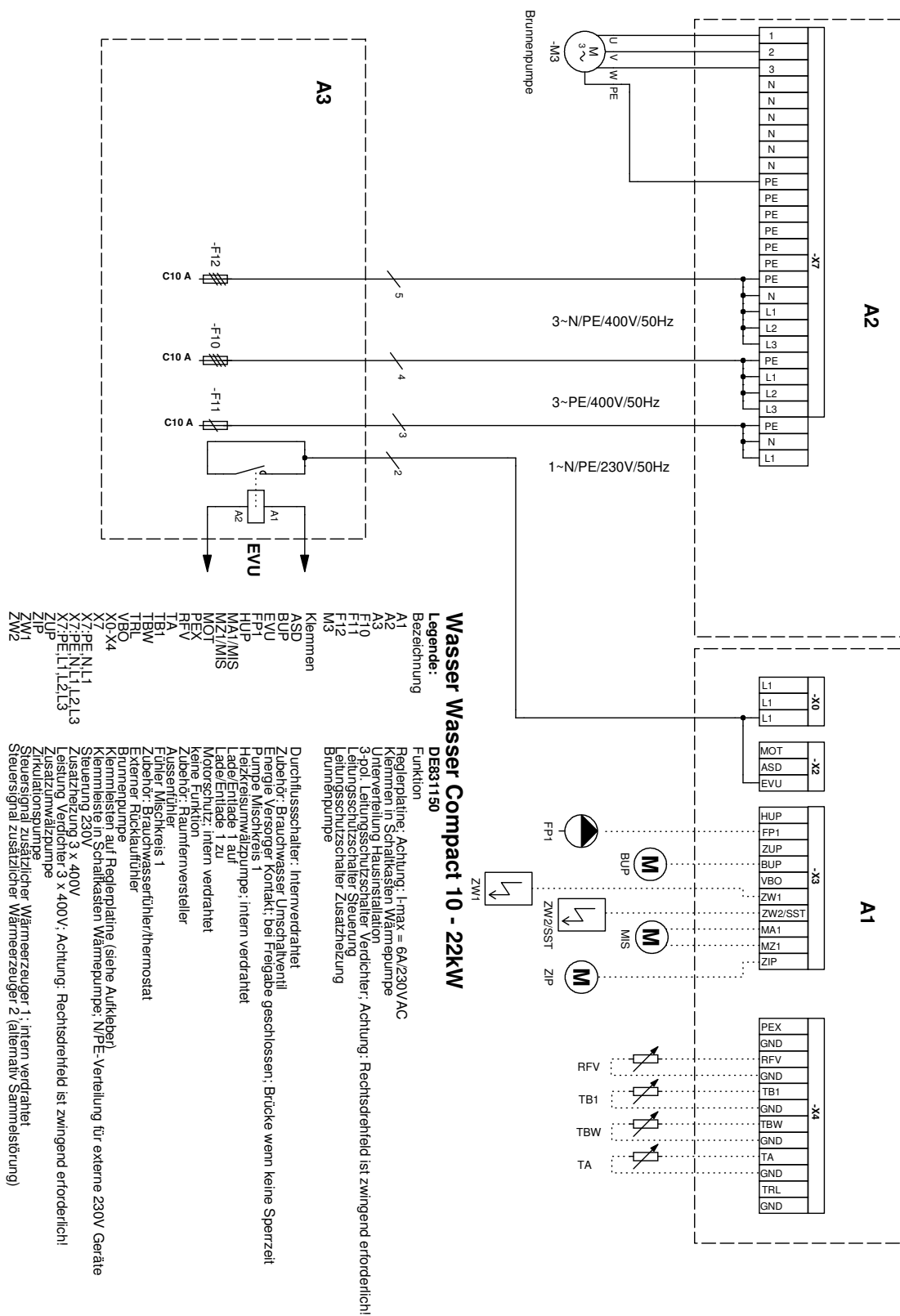
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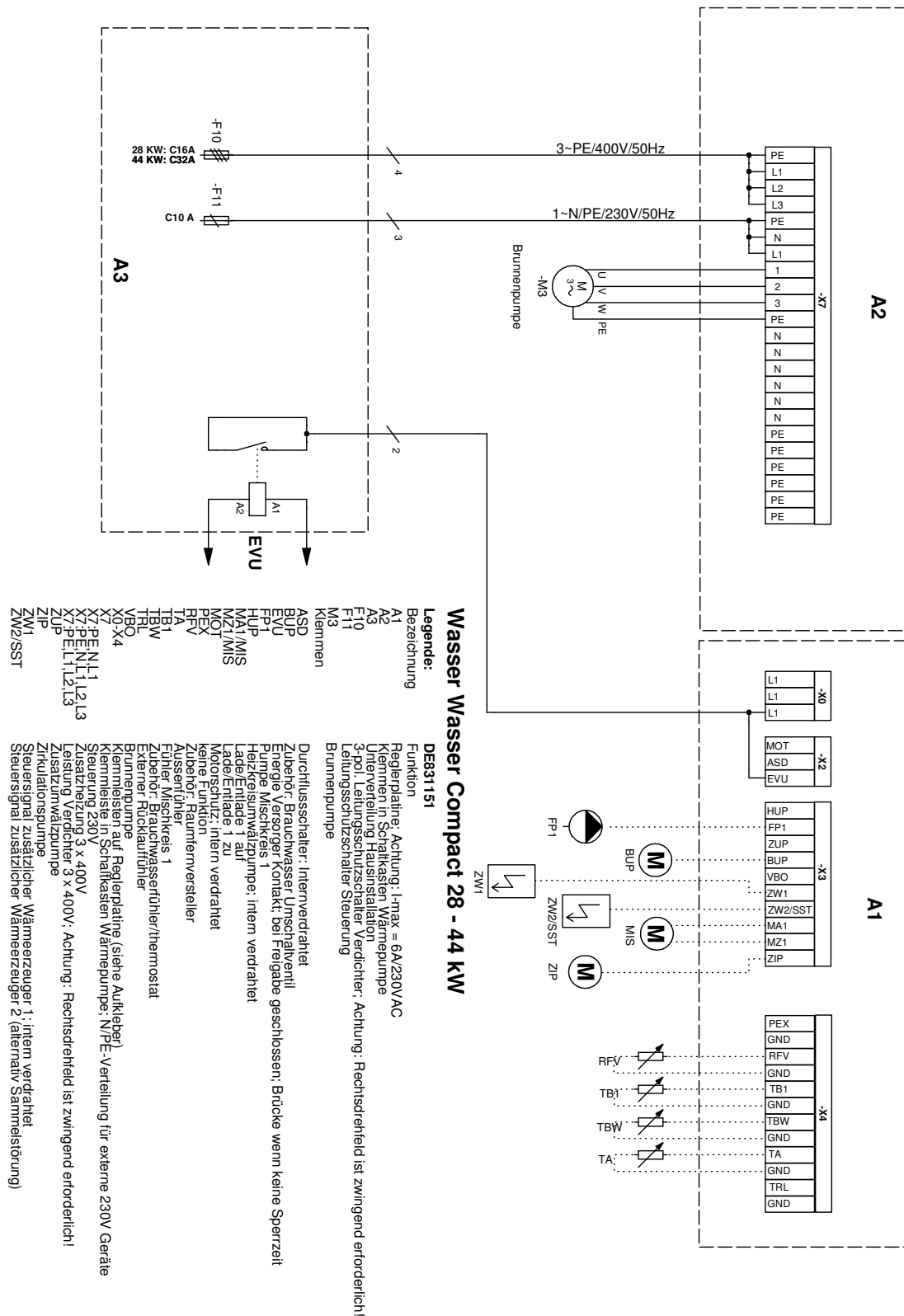
| Bezeichnung | Funktion |
|-------------|---|
| A1 | Reglerplatine; Achtung: I _{max} = 6A/230V/AC |
| A2 | Klemmen in Schaltkasten Wärmepumpe |
| A3 | Unterverteilung Hausinstallation |
| F-10 | 3-pol. Leitungsschutzschalter; Verdrähter; Achtung: Rechtsdrehfeld ist zwingend erforderlich! |
| F-11 | Leitungsschutzschalter Steuerung |
| M3 | Brünnepumpe |
| ASD | Durchflussschalter; intern verdräht |
| BUP | Zubehör: Brauchwasser Umschaltventil |
| EVU | Energie Versorger Kontakt; bei Freigabe geschlossen; Brücke wenn keine Sperrzeit |
| FP1 | Pumpe Mischkreis 1 |
| HUP | Heizkreisumwälzpumpe; intern verdräht |
| MA1/MIS | Lade/Entlade 1 auf |
| MZ1/MIS | Motorerschutz; intern verdräht |
| MOT | keine Funktion |
| PEX | Zubehör: Raumtemperersteller |
| RFV | Aussertfühler |
| TA | Fühler Mischkreis 1 |
| TB1 | Zubehör: Brauchwasserfühler/thermostat |
| TBW | Externer Rücklauffühler |
| TRL | Brünnepumpe |
| VBO | Klemmleiste in Schaltkasten Wärmepumpe; N/PE-Verteilung für externe 230V Geräte |
| X0-X4 | Steuerung 230V 3 x 400V |
| X7 | Leistungsschalter 3 x 400V |
| X7b | Leistungsschalter 3 x 400V; Achtung: Rechtsdrehfeld ist zwingend erforderlich! |
| ZIP | Zusatzumwälzpumpe |
| ZIP1 | Zirkulationspumpe |
| ZW1 | Steuersignal zusätzlicher Wärmezeuger 1; intern verdräht |
| ZW2/SST | Steuersignal zusätzlicher Wärmezeuger 2 (alternativ Sammelstörung) |



WWC 100H/X

Circuit diagram 1/3

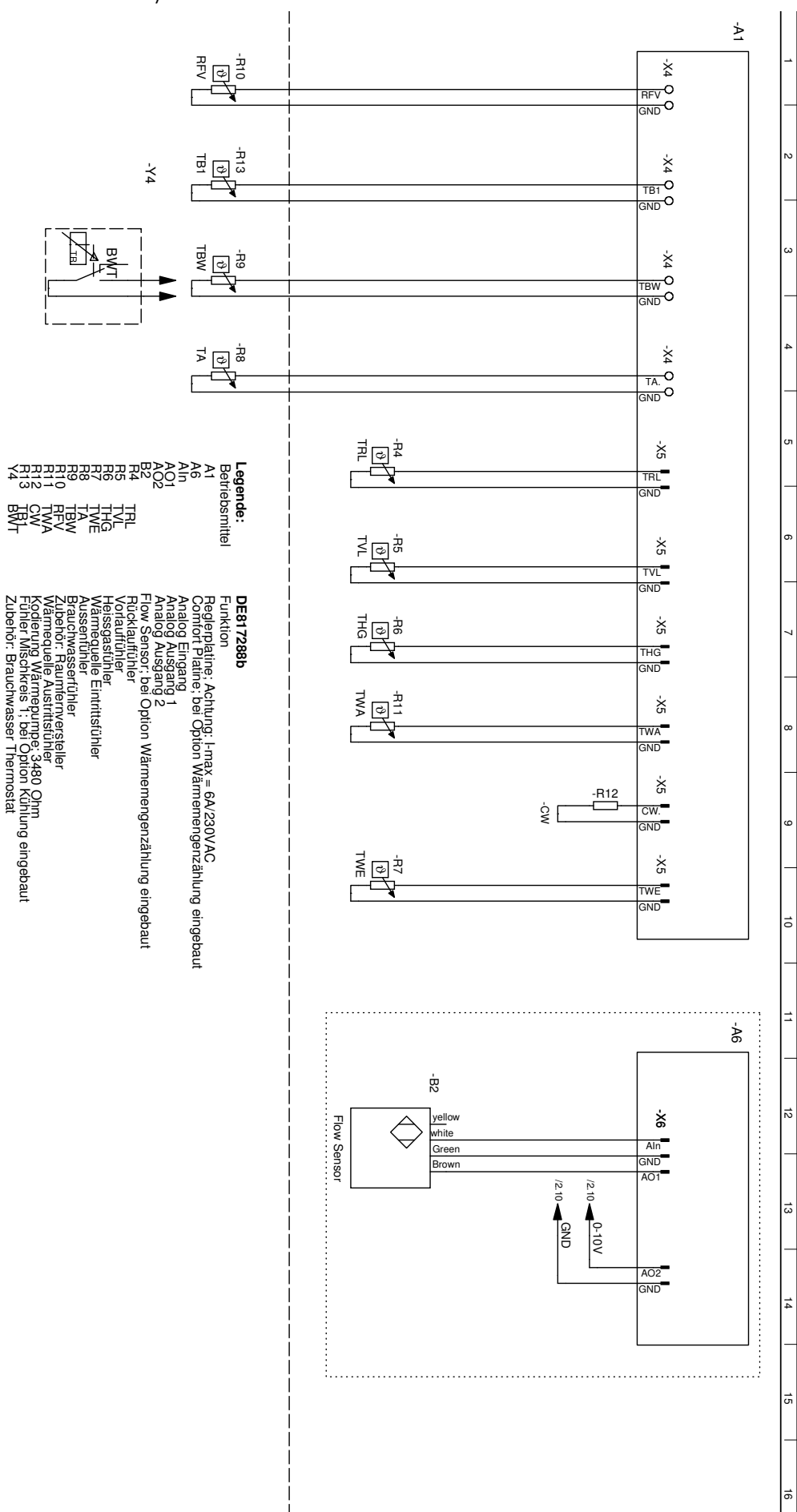


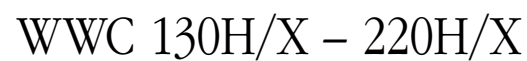




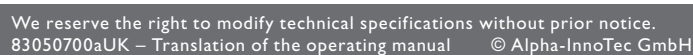
WWC 100H/X

Circuit diagram 3/3





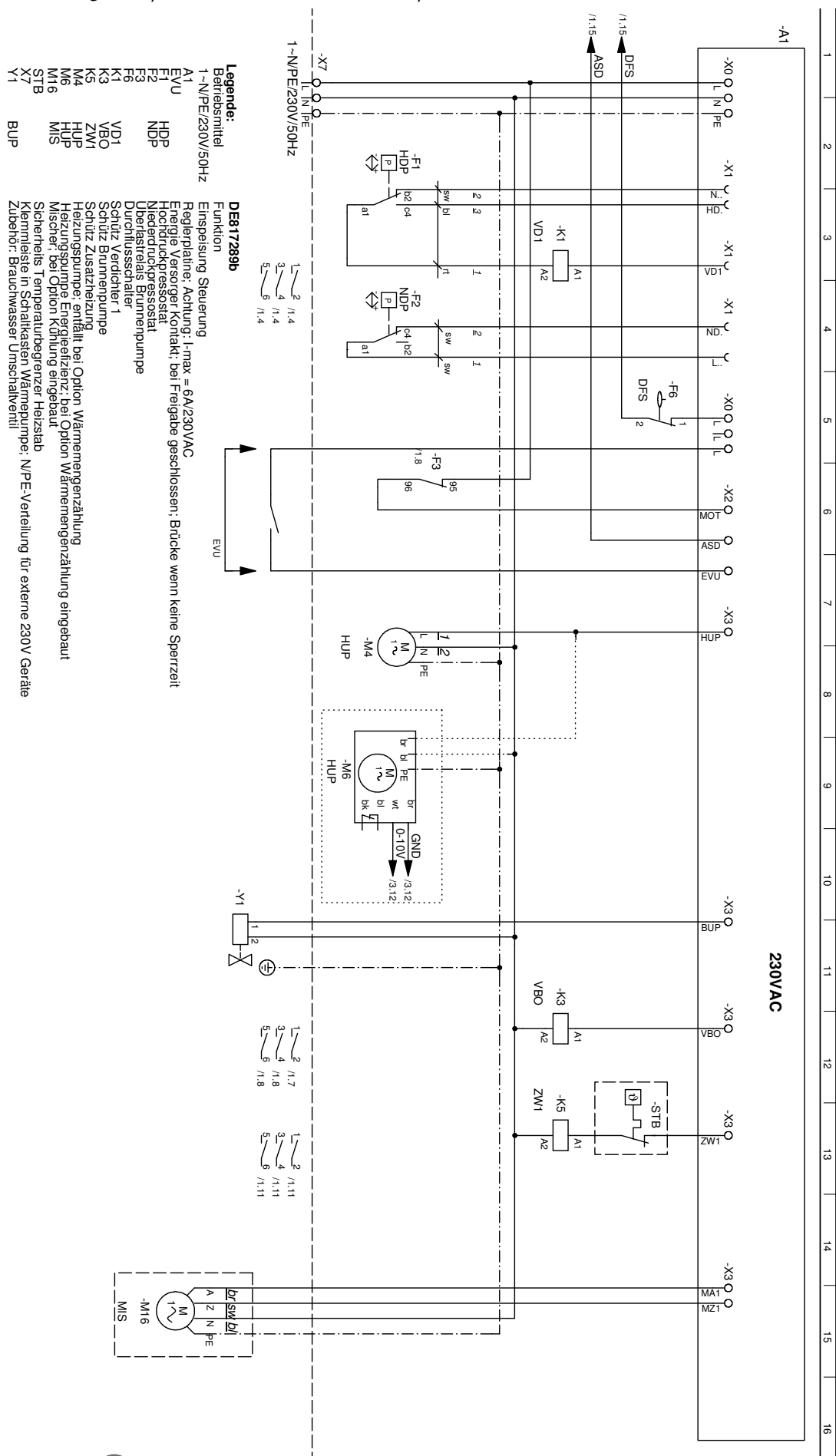
Circuit diagram 1/3





WWC 130H/X – WWC 220H/X

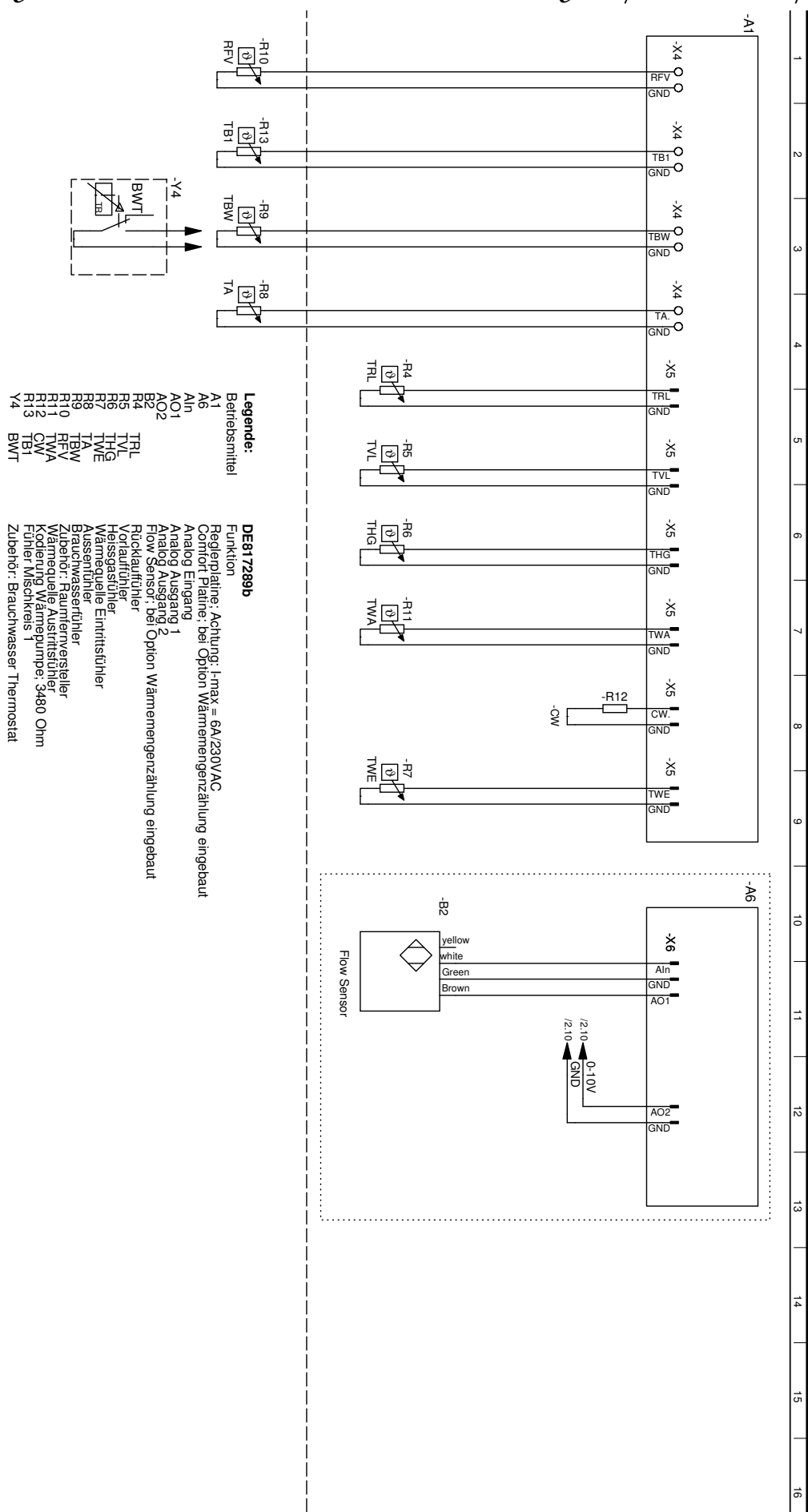
Circuit diagram 2/3





Circuit diagram 3/3

WWC 130H/X – 220H/X



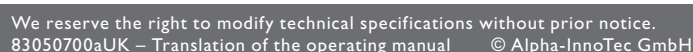


Circuit diagram 1/3



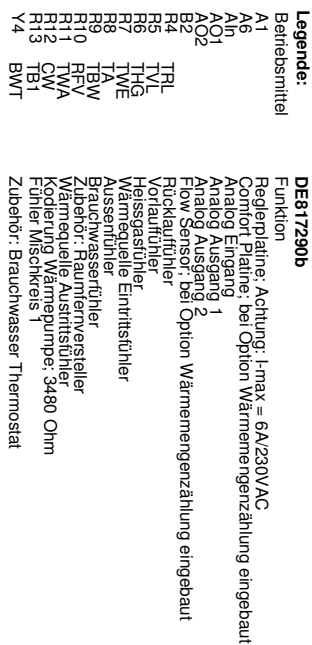


Circuit diagram 2/3





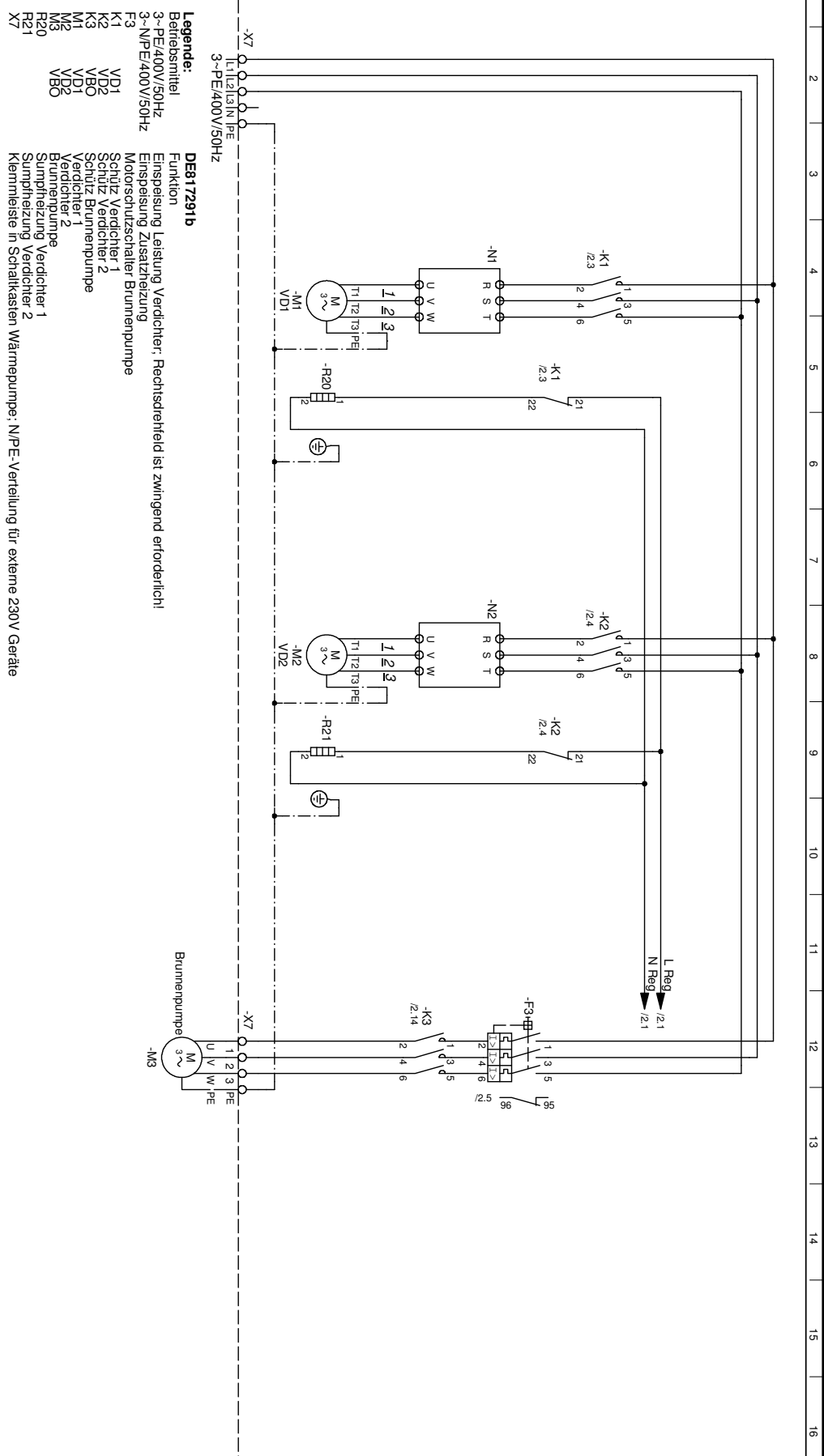
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Circuit diagram 1/3

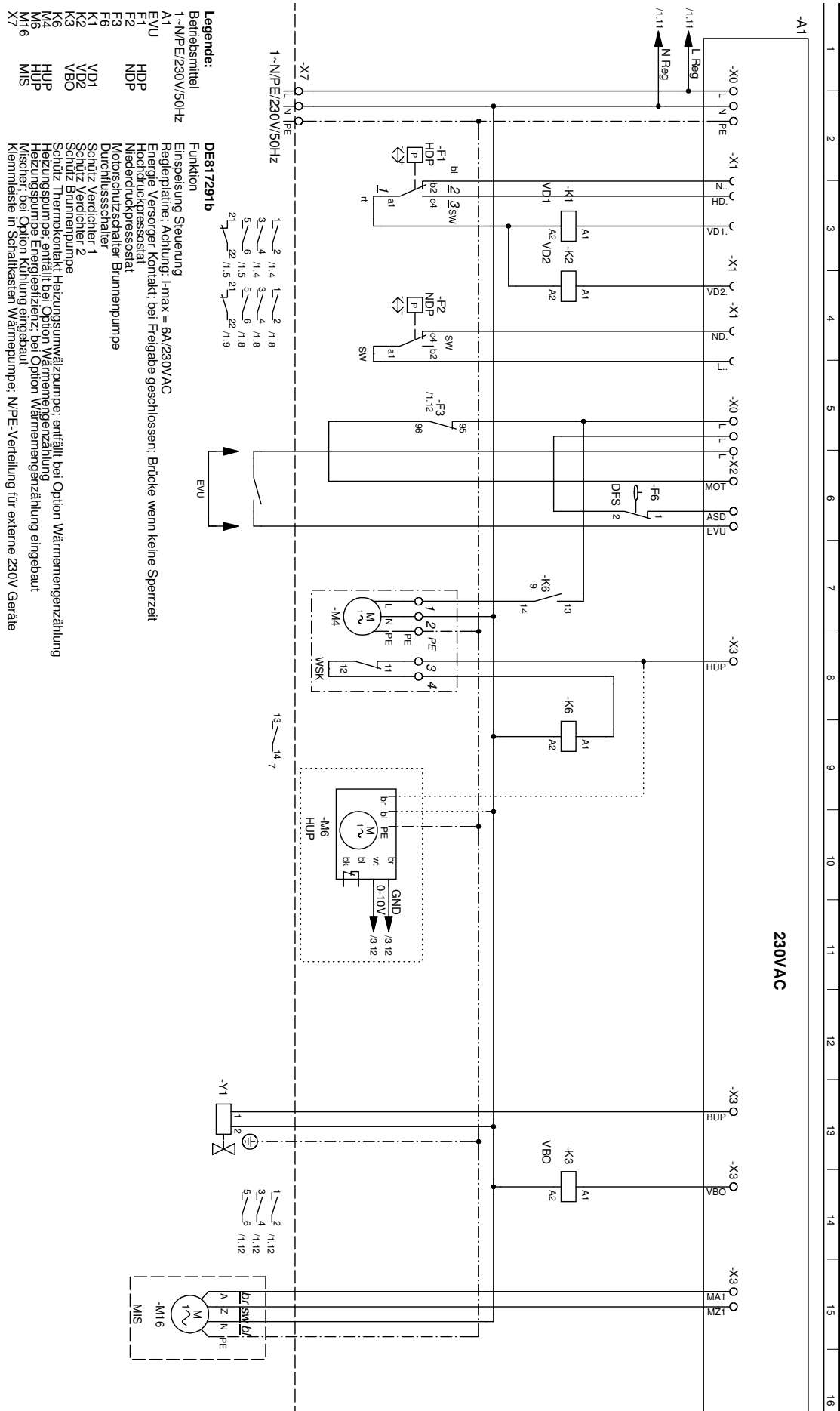
WWC 440X





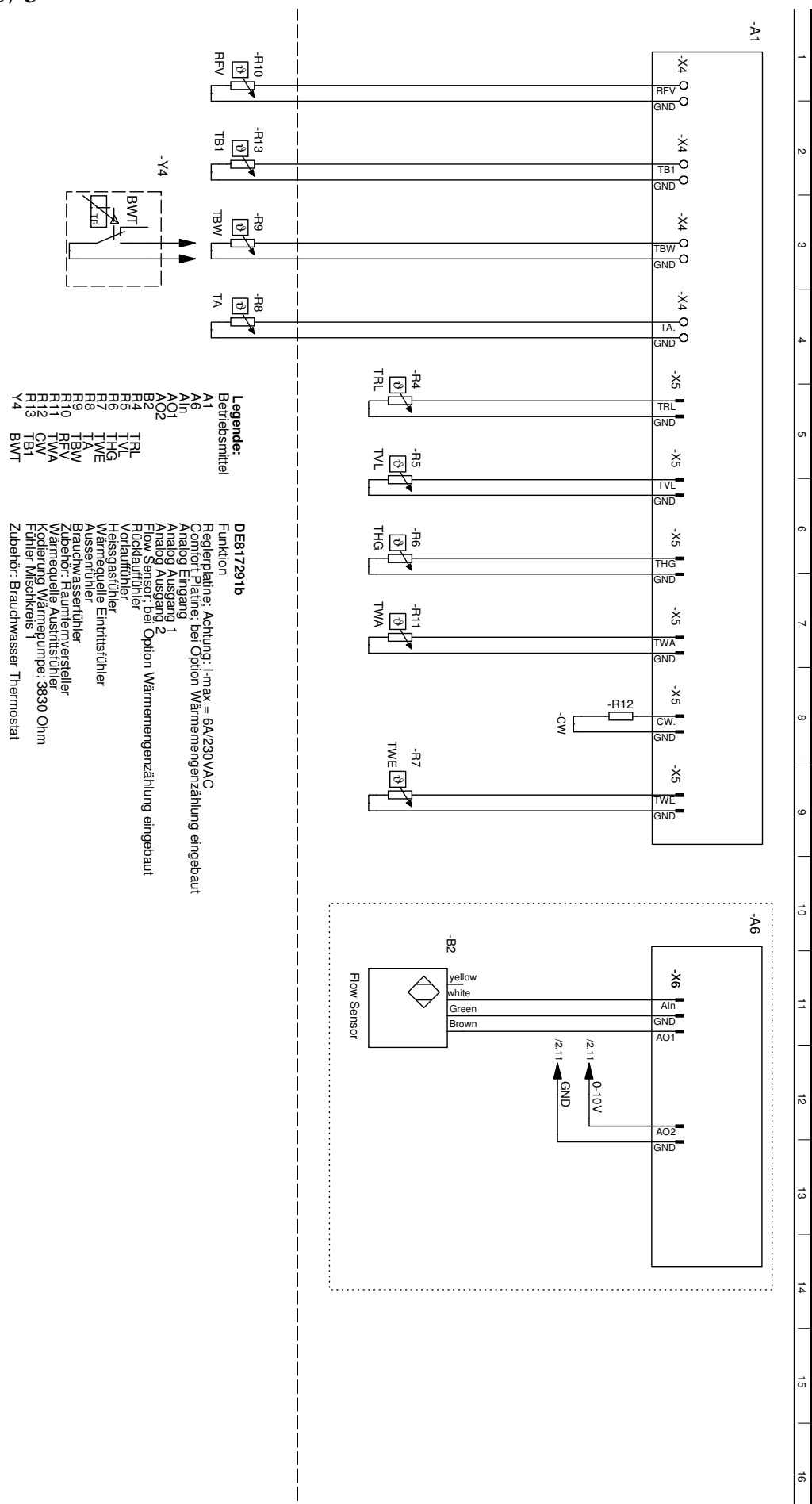
WWC 440X

Circuit diagram 2/3



Circuit diagram 3/3

WWC 440X





EC declaration of conformity



in accordance with the **EC Machinery Directive 2006/42/EC, Annex II A**

The undersigned
confirms that the unit(s) named in the following and placed on the market by us fulfil(s) the harmonised EC Directives,
EC safety standards and product-specific EC standards. This declaration becomes invalid if any changes are made to the
unit(s) without prior consultation with us.

DESIGNATION OF THE UNIT(S)

Heat pump

| Model | Order number | Model | Order number |
|------------|--------------|-------|--------------|
| WWC 100H/X | 100 481 | | |
| WWC 130H/X | 100 482 | | |
| WWC 160H/X | 100 483 | | |
| WWC 190H/X | 100 484 | | |
| WWC 220H/X | 100 485 | | |
| WWC 280X | 100 486 | | |
| WWC 440X * | 100 487 | | |

EC DIRECTIVES

2006/42/EC
2006/95/EC
2004/108/EC
* 97/23/EC

HARMONISED EN

| | |
|------------------|-------------------|
| EN 378 | EN 349 |
| EN 60529 | EN 60335-1/-2-40 |
| EN ISO 12100-1/2 | EN 55014-1/-2 |
| EN ISO 13857 | EN 61000-3-2/-3-3 |

* PRESSURE EQUIPMENT ASSEMBLY

Category: II
Module: A1
Notified body:
TÜV-SÜD
Industrie Service GmbH (Nr.:0036)

NATIONAL STANDARDS/GUIDELINES

DIN 8901

Company:

Place, date:

Kasendorf, 25/08/2011



Industriestrasse 3, D – 95359 Kasendorf

Signature:

Jesper Stannow
Head of Development

General checklist

FOR PREPARATION OF THE COMPLETION REPORT

The general checklist is intended as an aid for the installation and assembly personnel. It makes no claim to be exhaustive. Nevertheless, all items must be checked carefully for compliance.

Heat source air

- | | |
|-------------------------------------|-------------------------------|
| Channels closed and sealed | <input type="checkbox"/> Yes |
| Minimum cross-section is met | <input type="checkbox"/> Yes |
| Weather protection screen installed | <input type="checkbox"/> Yes |
| Rotary field of fan | <input type="checkbox"/> O.K. |

Heat source brine / heat source water

- Heat source volume flow 1) 2) ☐ O.K.
- Motor protection setting A
- Rotary field of heat source circulating pump ☐ O.K.
- Heat source filled, air-free and sealed ☐ Yes

Brine

- Frost protection inspected down to °C
Type of anti-freeze agent (please enter)

Water

- Water quality OK ³⁾ ☐ Yes
- Well units ☐ Yes
- Other heat source ☐ Yes

Heat pump

- | | |
|---|-------------------------------|
| Installation of condensate hose | <input type="checkbox"/> O.K. |
| Decoupled from structure | <input type="checkbox"/> Yes |
| Vibration decouplers of heating circuit and heat source connections mounted | <input type="checkbox"/> Yes |

Solar heat system

- Solar heat system filled, air-free and sealed ☐ No ☐ Yes
- Frost protection inspected down to °C
- Type of anti-freeze agent (please enter)

Hydraulic integration

- Integration of the heating heat pump into the heating system corresponds to the planning documents ☐ Yes
- Shut-off devices are correctly set ☐ Yes

Heating

- | | |
|--|-------------------------------|
| Volume flow 1) 2) | <input type="checkbox"/> O.K. |
| Heating system designed for maximum | °C |
| Heating system filled, air-free and sealed | <input type="checkbox"/> Yes |
| Low temperature heating | <input type="checkbox"/> Yes |
| High temperature heating | <input type="checkbox"/> Yes |
| All heating circuits can be opened | <input type="checkbox"/> Yes |
| Forward flow tank | <input type="checkbox"/> Yes |
| Return flow tank | <input type="checkbox"/> Yes |
| Separating tank | <input type="checkbox"/> Yes |
| Additional heating | kW |

Domestic hot water

- Type: Hot-water tank (please enter)
- ⁴⁾

- | | |
|---|-------------------------------|
| with heat pump | <input type="checkbox"/> Yes |
| Request with thermostat | <input type="checkbox"/> Yes |
| Request with sensor | <input type="checkbox"/> Yes |
| Volume flow ¹⁾ ²⁾ | <input type="checkbox"/> O.K. |
| Connections sealed | <input type="checkbox"/> Yes |
| Exchanger area | m ² |
| Nominal contents | l |
| Electric flange heating | kW |

Control / electrical connection

- All electrical components are permanently connected in accordance with the installation and operating instructions and the requirements of the electricity supply company (not a construction site connection) ☐ Yes
- Clockwise rotating field observed ☐ Yes
- All sensors are present and correctly installed ☐ Yes

l) checked with specifications. • 2) The minimum volume flow must be ensured through uncontrolled circulating pumps with constant volume flows. • 3) Report of water analysis must be submitted. • 4) No functional guarantee is given if tanks are used which are not made by Alpha-InnoTec GmbH or are not approved for the heat pump type..

- | | | |
|--|-----------------------------|------------------------------|
| The heating system is filled and pressure tested; the circulating pumps function properly. | <input type="checkbox"/> No | <input type="checkbox"/> Yes |
| The heat source system is completed, inspected and OK. | <input type="checkbox"/> No | <input type="checkbox"/> Yes |
| The heating circuit, heat source system and circulating pumps have been bled. | <input type="checkbox"/> No | <input type="checkbox"/> Yes |
| All volume flows and water flow rates have been checked and are OK. | <input type="checkbox"/> No | <input type="checkbox"/> Yes |

Checked on:

by:

Signature:

The following applies in Germany and Austria:

Send this general checklist **along with the completed report** to the factory customer service.

Sending the general checklist and the completion report also serves as a request for a technician authorized by the manufacturer to commission your heat pump.



Completion report for heat pump systems

COMPLETION REPORT AND REQUEST FOR FACTORY COMMISSIONING

During factory commissioning, the system will be inspected to ensure that it is functioning properly. This ensures that all factory specifications have been checked and that the system can operate reliably over an extended period. The factory commissioning involves costs and is mandatory for extension of the warranty services.

☐ INITIAL COMMISSIONING ☐ REPEAT COMMISSIONING

| | | | |
|--|----------------------------------|--|--|
| Heat pump type / serial number | | Regulator type | |
| CONTRACTOR | | END CUSTOMER / OPERATOR | |
| <input type="checkbox"/> electric | <input type="checkbox"/> heating | | |
| <input type="checkbox"/> other company | | | |
| Company | | Last name First name | |
| Contact person | | Street address | |
| Street address | | Postcode City | |
| Postcode | Head office | Phone | |
| Phone | | Preferred date: *) Alternate date: *) | |
| Date Time | | Date Time | |

*) The contractor must submit the completion report **along with the completely reviewed general checklist I4 business days** prior to the desired date of commission.
If there is a conflict with the date, you will be contacted by phone.

I hereby confirm that all preliminary work required for commissioning has been carried out and completed.
The system is ready for operation.

Requested commissioning

| | |
|--|--|
| IBN (Art.-Nr. I600210I) <input type="checkbox"/> | IBN P5+EW (Art.-Nr. I600250I) <input type="checkbox"/> |
| IBN 5+ (Art.-Nr. I600220I) <input type="checkbox"/> | IBN WP + LG5+ (Art.-Nr. I600090I) <input type="checkbox"/> |
| IBN 5+EW (Art.-Nr. I600230I) <input type="checkbox"/> | IBN L (Art.-Nr. I600500I) <input type="checkbox"/> |
| IBN P5+ (Art.-Nr. I600240I) <input type="checkbox"/> | IBN L EW (Art.-Nr. I600270I) <input type="checkbox"/> |
| Free IBN on the basis of the sales campaign <input type="checkbox"/> | |

I, the undersigned, hereby request commissioning in return for a fee.

Invoice to ☐ Contractor ☐ End customer / operator

| | | | | |
|----------|------|----------------------|-----------|---------------|
| Location | Date | Name (block letters) | Signature | Company stamp |
|----------|------|----------------------|-----------|---------------|

In the event that the system is not ready for operation and if installation work has to be performed on the system by the commissioning technician during commissioning, this will involve charges (billed separately) to the contractor. If the system is not ready for operation, the commissioning technician can request a repeat commissioning, which will involve additional costs. The contractor or an authorized representative must be present during commissioning.

It is absolutely necessary that the operator is present for the one-time, free instruction that occurs during commissioning.

A report will be prepared during commissioning.





Customer service

SERVICE ADDRESSES

For a current list and additional partners of the manufacturer, please visit www.alpha-innotec.com.

AT

Alpha-InnoTec Österreich
ECO-WP
Wärmepumpenhandels-ges. m.b.H
Währingerstr. 26
1090 Wien
Tel.: +43 (0) 800 205 852
Fax: +43 (0) 800 205 854
office@alpha-innotec.at
www.alpha-innotec.at

BE/LUX

NATHAN Import/Export N.V.-
S.A.
Lozenberg 4
1932 Zaventem
Tel.: +32 (0) 27 21 15 70
Fax: +32 (0) 27 25 35 53
info@nathan.be
www.nathan.be

BR

THERMACQUA
AV. República Argentina
3021 Conj. 14 Piso L
CEP 80610-260 Portao Curtiba
PR
Tel.: +55 (0) 41 301 566 59
Fax: +55 (0) 41 301 566 59
otto@thermacqua.com.br
www.thermacqua.com.br

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6246 Altishofen
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Fax: +41 (0) 62 74820 01
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www.alpha-innotec.ch

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1025 St. Sulpice
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Fax: +41 (0) 21 661 31 45
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www.alpha-innotec.ch

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Fax: +41 (0) 91 646 09 91
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Fax: +420 (0) 545 24 20 90
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www.alpha-innotec.com

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www.asap.dk

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1122 Budapest
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www.nathan.nl

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Fax: +47 (0) 51 6605 94
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www.alpha-innotec.no

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Fax: +48 (0) 63 242 37 28
hydro@hydro-tech.pl
www.hydro-tech.pl

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GudEnergy Energias Renováveis,
Lda.
Av. O Século, 21 r/c D.to
2135-231 Samora
Correia
Tel.: +351 (0) 263 652 727
Fax: +351 (0) 263 652 526
info@gudenergy.pt
www.gudenergy.pt

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Bjärneroth Teknik
Evas väg 5
280 64 Glimåkra
Tel.: +46 (0) 708 420 544
Fax: +46 (0) 444 222 0
bjarneroth@telia.com
www.btait.se

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EkoEnergija d.o.o.
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4205 Preddvor
Tel.: +386 (0) 42 555 780
Fax: +386 (0) 42 555 782
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info@econicres.com
www.econicres.com

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